

CONSUMERS' RESEARCH

INCOMPLETE FILE

Bulletin



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CONSUMERS' RESEARCH



Vol. 20 • No. 4

BULLETIN

October 1947

Off the Editor's Chest

WITH the termination of sugar rationing early this summer, U.S. consumers could tear up their ration books in celebration of the end to a governmental experiment in allotting food to 135,000,000 individuals in time of war. There is no record that there were any mourners of the passing of the rationing system, although a few of the OPA's one-time economic advisers occasionally make the pages of some learned economic journal with an elaborate discussion that attempts to rationalize the agency's basic theories and to explain away its failures.

While there is no one who has the temerity to advocate publicly a return to rationing of foods, there are a considerable number who are still beating the drums for control of prices by some form of government fiat; unfortunately, they have the support of a certain number of unthinking consumers who, in the face of experience in many countries to the contrary, assume that prices of commodities can be brought down from their present high levels by the simple process of having someone in authority issue the necessary decrees. Such consumers do not realize that no country in the world has been successful in fixing prices *and at the same time assuring an adequate supply of the commodities involved*. There appears, nevertheless, to be a sustained effort in certain quarters to mobilize public support for a renaissance of some of the powers of regimentation possessed by the late Office of Price Administration.

One of the most striking examples of this trend that has come to our attention was a two-page

mimeographed letter on the letterhead of the Harvard University Department of Government signed by a candidate for the doctor's degree in Political Economy and Government, in connection with his thesis. This letter read in part:

Increasingly economists are arguing that we may not achieve stability at high employment levels unless, as a nation, we are able to develop more effective resistances, either private or public, to inflationary price rises. I am interested in considering the possibilities of increased consumer representation in price determinations as an approach to the stability problem, and am curious how the activities and thinking of your organization bear upon the matter.

To what extent are the energies of your organization being directed to high-price resistance in the postwar period? How successful have you been? (I realize, of course, that the problems of price and product cannot be wholly separated.) Do you have any techniques for increasing the effectiveness of consumer representation in mind? What, do you think, are their prospects? What is your estimate of the strength of your organization and of "the consumer movement" in general with respect to growth? What is the relation of organized labor, farmer, and business groups to the consumer interest, as you see it? Are there ways in which the federal government could contribute to the further activation of the consumer interest?

If we were to have a more positive governmental price policy, thought would need to be given to means for obtaining "consent" for such a program. Consequently, I am interested particularly in your thinking along these lines and in your estimate of the political pressure your organization would be willing and able to muster for more public participation in price-making.

(Continued on page 33)

Scientific and Technical Experts and Editors: F. J. Schlink, R. Joyce, M. C. Phillips, Helen P. Alleman, A. R. Greenleaf, and Charles L. Bernier. **Editorial Assistants:** Mary F. Roberts and B. Beam.

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***For a brief cumulative index of 1947 BULLETINS preceding this issue, see page 31.

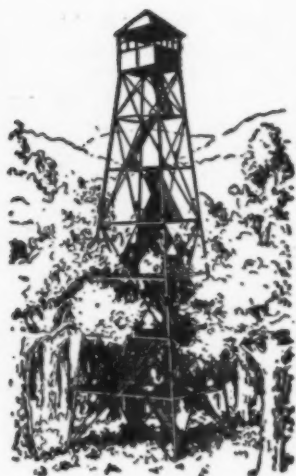
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The Consumers' Observation Post

THIS WINTER'S FUEL SUPPLY should receive close and constant attention from every consumer who wants to keep warm during the coming cold weather. Shortages of coal, oil, and gas are predicted for various sections. Oil tanks should be kept as full as practicable, so that there will be operating reserves when and if the dealers' supplies run out. Those who can do so will be wise to lay in their entire winter's stock of coal at the first opportunity. The oil shortage appears to be due to lack of steel for new refineries and pipelines. Inadequate transportation facilities are also a factor, with both oil and coal.

* * *

DOES THE TAXPAYER have the right to receive the benefit of researches made by Federal Government Bureaus with his money? At least one bureaucrat says no. In hearings before a House Appropriations subcommittee, Charles R. Denny, Jr., Chairman of the Federal Communications Commission testified that the F.C.C. laboratory had checked every FM receiver it could get, but he said, "We check them for a purpose, not of advising the public - the results of our investigations are confidential - but for our own guidance." The public, as is very commonly the case, pays taxes for something, and then doesn't get the benefit of the work it has paid for, except in very indirect and attenuated fashion.

* * *

LUGGAGE left from wartime stocks is reported to be selling very slowly in men's stores. It appears that nobody wants ersatz merchandise with inferior fittings, at a high price plus the luxury tax. One trade journal frankly advises dealers to mark the stuff down and take a loss in order to get rid of it before good luggage starts coming in around Christmas time, pointing out that brass fittings, good frames, and attractive linings are again available. Consumers will be well advised to delay their luggage purchases until the better products appear on the market; the others will often hardly be worth buying at any price.

* * *

A HIGH PROTEIN DIET and no starch or sugar, aside from six thin soda crackers a day, has proved highly effective in treating patients with gastric ulcers, reports Dr. Benjamin P. Sandler of the Veterans Hospital, Sampson, N. Y. From his studies, Dr. Sandler, who has also done important work in the field of tuberculosis and other diseases and their relationship to excessive carbohydrates in the diet, drew the conclusion that the fundamental cause of ulcer and pseudo-ulcer symptoms "was a disturbance in carbohydrate metabolism caused primarily by the ingestion of foods containing starch and sugar." As a further improvement on the protein diet, Dr. Sandler eliminated the soda crackers and substituted carbohydrate in the form of vegetables containing up to 5 and 10 percent of carbohydrates. (Snap beans, beets, broccoli, carrots, cauliflower, spinach are examples of such vegetables.) Fruits were rarely allowed and no fruit juices whatever.

* * *

DETERIORATION OF THE COTTON OR JUTE BACKING OF RUGS by attacks of mildew, particularly in damp climates, can be prevented by the use of a new fungicide. Investigations by the Canadian Research Institute of Launderers and Cleaners, reported in the trade journal Soap and Sanitary Chemicals, indicated the effectiveness of compound G-4 (2,2'-dihydroxy-5,5'-dichlorodiphenylmethane) dissolved in isopropyl alcohol in the proportions of one to eight parts by weight. The resulting solution was added to 192 parts by weight of Stoddard solvent to make a solution of one-half of one percent in strength, to be applied to the rug backing by spraying. Only enough of the solution is needed to dampen the backing of the rug.

PRICES of everything have gone up, and those who think that food is the chief offender might well ponder the findings of the editor of a technical journal who made a few comparisons of prices of radio and other electronic equipment from the pages of a mail-order house catalog for 1942 with prices in the 1947 catalog. The ratio of 1947 prices to those for comparable merchandise in the 1942 catalog ranged from 109 percent on a microphone to 245 percent on a six-tube table-model radio set. Out of 28 items in the comparison, only two, both radio tubes, showed a decrease in price. It is not surprising that radio shops are beginning to find that their stocks are ample and purchasers are no longer rushing in to buy, as they once did.

* * *

CUSTARD PIE may have been an excellent stage prop in the days of silent pictures, but it can also be a dangerous source of food poisoning. The California Department of Public Health this past summer reported one fatal and eight severe infections from the consumption of coconut custard pies which had been kept at room temperature in the store for ten hours before being sold. Further study indicated that one of the employees of the bakery where the pies were made may have been a carrier of the disease organism which caused the poisoning.

* * *

SOME MAGICAL METHOD FOR ELIMINATING EXCESS POUNDAGE is constantly being sought by those who wish to eat as they please and still maintain a trim figure. There may be occasions when a competent physician feels called upon to prescribe a drug such as amphetamine to depress the appetite (and only a physician should venture to prescribe any sort of drug for obesity), but for most people a well-selected diet rigorously followed to reduce the intake of food is the soundest method. Recently the Journal of the American Medical Association exposed what it called a "shotgun approach" to the problem of obesity called Clarkotabs, based on the use of mixtures of profetamine phosphate (an amphetamine derivative, thyroid, atropine sulphate, aloin, and phenobarbital. The indiscriminate use of potent drugs such as thyroid has long been known to be dangerous and there is evidence that thyroid, except in certain types of cases, is ineffective as a weight reducer. Atropine in the product, points out the A.M.A. Journal, may make food unpalatable by drying up secretions of the mouth, while the aloin would act as a cathartic. The phenobarbital in the formula would act as a sedative, and so might function to mask the unpleasant effects of the other drugs.

* * *

TELEVISION SETS, in spite of their high prices and limited programs, are being bought as fast as manufacturers can turn them out. Taverns in Philadelphia find the video receivers so effective in attracting customers that the purchaser of a new set, reports Electronics, is likely to be offered a premium for it by a tavern keeper the day after it is installed. Where the same situation prevails as in Norwich, Conn., home purchasers may be well advised to part with their sets. The Norwich municipal power plant has been charging television set owners \$1.26 a month extra on their electricity bills on the ground that when an outstanding program is on and all video sets are in operation the lighting load will be exceptionally heavy and extra load capacity will need to be provided. The utility company's reasoning, however, seems to have been of a superficial sort, as it failed to take into account the fact that it is customary to turn off most of the electric lights in the room when the television program is on. The magazine suggests that the charge made is all out of proportion to the extra costs arising from the increased amount of load capacity required.

* * *

NUTRITION is now known to play such an important role in determining health and hastening the recovery of a patient that the Journal of the American Medical Association urges that greater attention be given nutrition in the teaching of medicine. The Journal notes the fact that cases of vague ill health and slow recovery from many diseases are often related to inadequate nutrition. Proper diet, particularly with respect to adequate amounts of protein and vitamins, is so important a factor in the recovery of a patient from surgery that the surgeon himself has often been forced to give personal attention to the food his patient receives in the hospital.

(Continuation of this section is on page 37)

Domestic Oil Burners

THE oil burner business is booming at such a rate that some manufacturers, distributors, and dealers are indulging in practices which border closely on racketeering. Because oil burners are very commonly assembled with parts of more or less standard, conventional design, supplied by manufacturers who specialize in particular parts, such as transformers, pumps, motors, ignition systems, controls, etc., it is comparatively easy for the burner manufacturer to substitute inferior or substandard parts. Thus when burners otherwise complete are being held up for lack of one or more parts or controls, the assembling firm is likely to look about for substitutions, and can often produce the substitute part without any noticeable change in the appearance of the finished product. Sometimes the substituted part is simply that of another maker, with equal characteristics and quality; in that case, the consumer is fortunate, and the completed burner will not suffer by comparison with the regular output. In many cases, however, much wider liberties have been taken in the matter of substitutions. At least one manufacturer, unable to secure a standard sized motor, found a larger size and featured his burner in his sales talks as "Having the advantage of being equipped with a generously over-sized motor." As burner motors are not subject to widely fluctuating loads, an oversized motor would not offer advantages; it would indeed use more electricity and thereby involve continuous extra expense to its owner. In a survey made by CR, cases where *undersized* motors were used were numerous. One dealer even dealt with the shortage problem by buying a lot of second-hand fans and using their motors. Several other manufacturers, unable to secure iron fan housing

and base castings, substituted weaker castings of "white metal"; these would give serious difficulty because of inability of the alloy to hold the burner parts in proper alignment.

Practices in the burner industry, including use of black market sup-

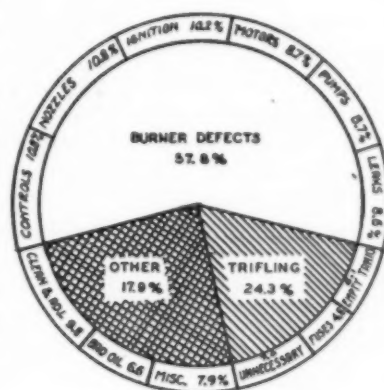
plies of tanks, wire, pipe, controls than previously. The general opinion was that undue service difficulties are due almost entirely to the unestablished or fly-by-night equipment manufacturers or dealers.

Servicing

According to statistics reported in one of the industry's trade journals, the service calls per burner have been from 1.5 to 1.7 per year for the past several years. These figures include the call for the desirable annual overhaul, but the figures given would undoubtedly be higher if the less responsible dealers reported all of the service required on their fraction of the burners serviced.

The service calls, as shown in Figure 1, result from some 12 rather evenly divided faults, with controls, nozzles, ignition, and adjustments, each accounting for about 10% of the total. Figure 2 shows the comparison of defects with those of pre-war burners. With the exception of controls and calls for cleaning and adjusting, the differences were small. The downward trend in calls due to defective controls indicates that control units have been improved in recent years. Some service calls are necessitated by the owner's carelessness in permitting the tank to become empty; when this happens, the burner controls require resetting.

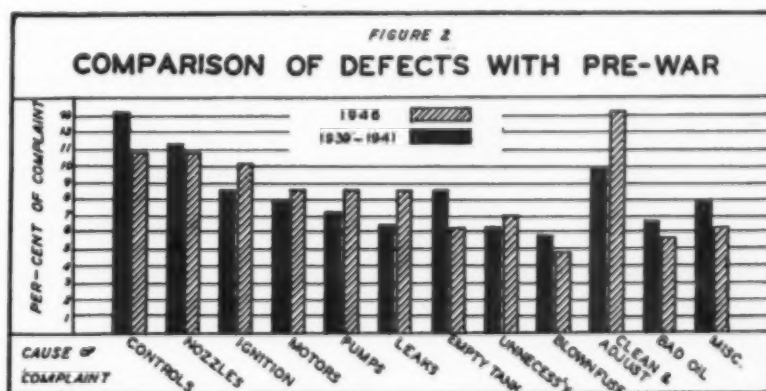
FIGURE 1
CAUSES OF SERVICE CALLS



1946

plies of tanks, wire, pipe, controls, motors, etc., have resulted in serious inflation of prices that were already too high. CR's investigation showed that the old established companies were almost universally refusing to sell inferior or incomplete equipment. In some cases they were even using better or improved ignition systems and filters, and more dependable con-

FIGURE 2
COMPARISON OF DEFECTS WITH PRE-WAR



Points Requiring Caution

A factor that makes the selection of a reputable burner of greater importance than in pre-war years is the scarcity of repair parts for almost all burners. All available parts have been built into new units to such an extent that the consumer unfortunate enough to have his burner break down, due to a part failure, may in many cases run into serious difficulties when he attempts to have it repaired.

CR's field study indicated that the following points should be particularly guarded against by prospective purchasers.

Don't attempt to use a heavier oil than the burner type requires. In several instances owners were found to have had trouble due to the use of No. 2 oil where No. 1 oil should have been burned. This is particularly true of the pot vaporizing type of burner and of some of the older types of rotary burners. In many cases, the use of the cheaper and heavier oil is the fault of the burner salesman, who has misrepresented the burner in order to make the sale. In nearly all cases the pot vaporizing burner works better on No. 1 oil.

Use of ball-bearing motors is not recommended. While ball-bearing motors have advantages for some uses, their use on oil burners frequently leads to complaints due to the difficulty of keeping them adequately lubricated.

Don't buy a burner with inferior controls. There are relatively few manufacturers of reputable standard controls in the country. Among these are Minneapolis-Honeywell, Mercoid, Penn, Perfex, Detroit Lubricator, White-Rodgers, and perhaps a few others. The purchase of an oil burner which uses controls not generally known to the trade will usually be inadvisable.

Be sure that the burner is equipped with adequate control devices. Every motor-driven burner should be equipped with: (1) A room thermostat. (2) A high limit water temperature, air temperature, or

steam pressure control to shut off the burner when the desired *maximum* temperature of the furnace or boiler has been reached. (Some authorities favor two such safety controls; in view of the large heat input of an oil burner and the consequent dangers to the safety of boiler, radiators, and other equipment if a burner should run continuously instead of being shut off as intended after a proper period of operation, it is considered most important that there should be a "second line of defense" to take over in case of failure of one control. Control failures *do* occur, and they can at times cause serious damage, or even be the cause of setting a fire.) (3) A combustion control to shut off the burner if the oil fails to ignite after a reasonable time. (4) An automatic draft damper to prevent excessive drafts. (5) A low water cut-off on steam systems to shut off the burner if the boiler runs dry.

In addition to these it is essential to have a low limit control to maintain a *minimum* boiler water temperature on all hot-water systems where a summer-service water hookup is included. This can be accomplished by not allowing the circulating pump to come on when the water in the boiler is below the predetermined minimum, and at the same time so controlling the boiler that the burner will run whenever the temperature is below this minimum. With today's shortage of controls, these are the controls most frequently omitted.

Retail Prices

A current oil burner problem closely paralleling that of quality is price. For the five years ending with 1941, the average installed price for a conversion burner was \$256; today this has increased to at least \$370, depending upon the locality. While it is true that dealer costs have risen some 50% as against retail price rises of about the same amount, there is one factor that the dealers find difficult to explain. This is their current

allowance of the same markup to take care of costs of selling as previously; this seems entirely unjustified in view of tremendous backlogs of unfilled orders as compared with the highly competitive pre-war years. A return of the buyer's market will be sure to result in a downward revision of oil burner prices, as they are way out of line, even when allowance is made for the extra costs of labor and parts.

Average Installed Prices of Conversion Oil Burners

Boston.....	\$347
New York.....	525
West Chester Co.....	439
Long Island.....	381
N. New Jersey.....	398
Philadelphia.....	382

Contract Service

Following the lead of the gas companies, many of which absorb all service charges in their gas rates without separate billings to their customers, there is a growing trend in the oil burner industry to provide all-inclusive annual service contracts. While this is still a controversial matter within the industry, with dealers in some disagreement as to the extent to which they should go, those who have tried complete-service plans report a high degree of satisfaction among their customers.

In dollar cost, both to the dealer and the customer, all-inclusive service works out about the same as individually billed service calls, but from the consumer's standpoint, the first-named practice has the marked advantage of providing him a cushion of insurance against some unexpectedly large service burden in any one year. The consumer should take care when signing a service contract to be sure that it includes all burner parts, and piping, and summer overhaul, or conditioning, without extra charges. It will never be wise to sign a service contract that covers labor only. Such an arrangement merely encourages the

dealer to introduce all sorts of expenses for parts which often may be unnecessary and will likely be high priced. The claim by some dealers that such essential parts as combustion chambers and storage tanks cannot possibly be included in such contracts, is not defensible, for on one reliable survey, it was learned that when the cost of the few replacement tanks that were needed was spread over all customers, the cost per customer was only 39 cents.

Sixteen percent of the oil-burner owners in the country took advantage of contract service in 1946 at an average annual cost of about \$15.60, including parts and an annual cleaning and overhauling. In comparison, the average service expense of the non-contract owner was \$13, plus \$6.60 for cleaning and conditioning, making a total of \$19.60.

Dealers will usually give all-inclusive parts and labor contracts only in cases where they have installed the burner themselves and have thus been responsible for its care from the start.

One interesting sidelight on service costs is that, up to the age of 12 years at least, there is very little correlation between the age of the burner and the annual cost of service. In fact in one survey of 100 burners, 50 from 2 to 7½ years old were found to have cost \$13.60 to service last year as against \$12.40 for the remaining 50, 7½ to 12 years old.

Problem Largely One of Manufacturer and Dealer Responsibility

Because of the extreme degree to which the consumer is at the mercy of those who will care for and service his burner and equipment, it is more important than it is with most items that in selecting an oil burner the integrity of the distributor or dealer be fully known. With the older manufacturers, whose products are widely sold and well known, the problem is simple. However, it will be worth while not to consider pur-

chase of a burner of a type introduced during the war years, since very few bona fide new burners were offered until after V-J Day.

Selection of the dealer is more important even than selection of a good manufacturer. A good dealer can, through intelligent service and care, often get fair results from a mediocre or poor burner; but with a poor dealer, the best burner may be in constant trouble through faulty installation and lack of considerate service.

To help guard the consumer against irresponsible dealers, The Better Business Bureau of Philadelphia in cooperation with The Electrical Association of Philadelphia recently issued a pamphlet of advice to prospective oil burner purchasers, in which two points were stressed: (1) know your dealer; (2) read and understand your contract.

In the survey made by CR it was found that most complaints arose from such misrepresentations as: promising immediate delivery when no units were available; guarantees without definite limits as to time; "baiting" by fictitiously low advertised prices; showing prices that are not all-inclusive; verbal agreements that the company will not honor; inducing the signing of blank contracts; demanding that the consumer sign "completion slips" prematurely; failing or refusing to give copies of the contract; installing used equipment on the pretext that it is new, and then asserting that it was "only temporary," if caught; turning finance paper over to others without consumer's knowledge; failure to have approval by the Fire Marshal or other local officials having jurisdiction.

With the addition of such advice as checking for Underwriters' approval seals, determining that service will be adequate and reasonable, and being sure that everything is in writing and reads as intended, the principles applying to the purchase of an oil burner are much the same as those applying to the purchase of any other major appliance.

A. Recommended

ABC (Automatic Burner Corp., 1823 Carroll Ave., Chicago 12) High-pressure gun burners; boiler-burner and furnace-burner units. Service both as found in the field and as reported by the dealers, normal. Being installed with standard controls (usually Minneapolis-Honeywell). One entire big-city district reported receipt of only 100 burners last year.

Airtemp (Airtemp Division, Chrysler Corp., 1119 Leo St., Dayton, Ohio) Domestic furnace-burner and boiler-burner units with high-pressure gun burners. One large dealer reported receipt of only 20 burners in the entire year, but found product gave entire satisfaction, with no service calls beyond normal expectations.

Bethlehem Crusader (Bethlehem Foundry & Machine Co., 225 W. Second St., Bethlehem, Pa.) High-pressure gun-type conversion burner. Currently being shipped with standard controls; service normal.

Delco (Delco Appliance Division, General Motors Corp., 391 Lytel Ave., Rochester, N. Y.) High-pressure gun burners, domestic and small commercial; boiler-burner and furnace-burner units. Parts replacement, service and complaints from the field are reported to be the lowest in the history of the burner, this being due to several outstanding improvements. Among these are Delco's motors wound with glass-insulated wire. This makes the motors high in resistance to both heat and moisture. Delco also manufactures its own thermostats and stack switches, uses Minneapolis-Honeywell *Aquastats* and *Pressuretrols*.

Electrol (Electrol Burner Mfg. Co., Rutherford, N.J.) High-pressure gun burners; boiler-burner and furnace-burner units. All owners interviewed reported entire satisfaction. Quality maintained, burners being furnished complete with standard controls (Minneapolis-Honeywell).

Fluid Heat (Fluid Heat Div., Anchor Post Products Co., 6373 Eastern Ave., Baltimore 24) High-pressure gun burners; boiler-burner and furnace-burner units. Have substituted aluminum castings for iron without extra charge. (Burner castings should always be aluminum, iron, or brass.) Service normal; consumers report satisfaction.

General Electric (General Electric Co., Lawrence St., Bloomfield, N.J.) Domestic boiler-burner and furnace-

burner units; high-pressure gun burners. All models seen and all dealer and distributor reports perfectly normal.

Gilbarco (Gilbert & Barker Mfg. Co., West Springfield, Mass.) High-pressure gun burners; boiler-burner and furnace-burner units. Manufacturer maintaining standards in all details.

Kleen Heet (Kleen Heet Inc., 1823 Carroll Ave., Chicago 12) High-pressure gun burners; furnace-burner units. Being installed with standard equipment including Minneapolis-Honeywell controls. Owners apparently well satisfied; service calls normal.

Petro (Petroleum Heat & Power Co., Stamford, Conn.) High-pressure gun burners; boiler-burner and furnace-burner units. One distributor reports that of over 200 burners sold since the war he had not had a single complaint due to faulty equipment. A spot check of several owners would appear to confirm this. Burners arriving complete with Minneapolis-Honeywell controls and Underwriters' approval.

Timken Silent Automatic (Timken Silent Automatic Div., Timken-Detroit Axle Co., 100 Clark Ave., Detroit 32) Vertical rotary and high-pressure gun burners; boiler-burner and furnace-burner units. The rotary (wall flame) model represents

98% of sales. Burners being shipped complete with Underwriters' approval, Minneapolis-Honeywell, or Perfex controls. Service required seems to be at a minimum, with distributors reporting that most of the service today is due to the relative inexperience of men necessarily employed since the war.

Toridheet (Toridheet Division, Cleveland Steel Products Co., 7306 Madison Ave., Cleveland) High-pressure gun burners and vertical rotary burners; boiler-burner and furnace-burner units available with both types of burners. All installations seen, and dealer reports, satisfactory.

Williams Oil-O-Matic (Williams Oil-O-Matic Heating Corp., Bloomington, Ill.) Low- and high-pressure gun burners, domestic and industrial; boiler-burner and furnace-burner units. Burner and installation quality has been maintained including shipment with Minneapolis-Honeywell controls. A number of owners interviewed reported either no service required or service of only a very trifling nature.

York-Heat (York-Shipley, York, Pa.) High-pressure gun burners; boiler-burner and furnace-burner units. Owners interviewed all reported good service from the company and were well satisfied.

B. Intermediate

Bethlehem Dynatherm (Bethlehem Foundry & Machine Co.) Boiler-burner units with high-pressure gun-type burners. Several owners interviewed; all reported entire satisfaction with minor complaints, or no complaints at all. Approximately half of those interviewed had replaced coal; the remainder, conversion burners using oil. Several of those who had replaced other oil burners commented on the saving in fuel but such observations are not necessarily reliable. Some owners and dealers commented, without actual complaint, that these burners were slightly noisier than normal. Also some units are now being shipped without casings, which the manufacturer has promised to supply later.

Heat-Pak (Aldrich Co., Wyoming, Ill.) Domestic boiler-burner units with high-pressure gun burners; high-pressure gun-type conversion burners. Have always enjoyed a good reputation but, according to a leading heating contractor interviewed, they have, during the past six months, had field complaints due to motors and fuel pumps. Although it is expected that this difficulty will be straightened out, a B rating is given this make for the present.

A Handy Jar Wrench

A PRACTICAL little wrench for opening screw-top jars and bottles, lifting off crown caps, and removing vacuum-seal closures, made by the Federal Tool Co., Chicago 12, and selling at 29c, is now available in ten-cent stores. It is sturdily built, and performs its function handily and well. A 1/16-in.-thick tinned metal stamped strip of U-cross-section about 7½ in. long forms the basic part of the wrench. A spring-retracted lever arrangement is free to slide along this into any position desired. Nineteen 3/16-in.

holes in the U-shaped piece provide stops for the sliding lever-clamp so that it may be locked at any position desired to suit the size of the lid or cap to be removed. After it is placed at this position, the lever is closed by squeezing it toward the U-shaped base, and this motion advances the moving jaw slightly so as to grasp the cap firmly with a toggle action giving a good mechanical advantage.

The concentration of stress upon the cap is such that the jaw

will tend to crush the threads of a cap of thin metal such as is used for some pickle jars, etc., which would make it difficult to replace the cap properly in re-using it. With the first bottles and jars opened, there was also a feeling of awkwardness caused by the necessity of grasping the lever tightly while exerting a counter-clockwise pressure on the handle. In spite of these minor defects, it is believed likely that with some experience in use the device would serve satisfactorily in all except exceptional instances.

Three High Fidelity Loud-Speakers, Two AM-FM Phonograph Combinations, Two Tuners

Three High Fidelity Loud-Speakers

THE procedure for testing and rating of loud-speakers is difficult and not yet standardized, and it was necessary for CR to consider many factors before deciding upon a test procedure which would give a reasonably satisfactory method of rating.

The service required of a loud-speaker is so complex that unfortunately it is not yet possible to determine performance in all respects by instrumental tests, and listening tests must in all cases be the final basis of judgment concerning the ability of the speaker to reproduce musical sounds with naturalness and pleasing quality. Distortionless, or even approximately distortionless, reproduction is not yet possible by any type of loud-speaker, and hence there is always the problem of deciding by the ear whether reproduction of actual musical sounds is reasonably satisfactory and free from those types of distortion which cause unpleasant reactions in discriminating listeners. It must also be remembered that loud-speakers are quite variable and the listener's perceptions are also subject to wide variation—differences which are not yet fully understood, so that listening tests by well-qualified observers are always necessary. Instrumental techniques have their value, and will serve quick-

ly to eliminate any speaker which is beyond the pale, so to speak. They fail, however, as already pointed out, to discriminate surely between speakers which fall in what might be called the exceptionally good performance class.

The test room in which measurements were made was about the size of an average living room. One of its walls and the greater part of its ceiling had been soundproofed and the remaining walls lined with a soft finished wallboard (similar to that known by the brand name *Celotex*).

Each speaker under test was securely mounted in an enclosure lined with sound absorbing material. This enclosure was so constructed that its volume could readily be changed from 4 to 10 cu. ft. as might be required to suit a particular speaker. This enclosure was placed on the floor 4 ft. from and centrally located with respect to the soundproofed wall. The microphone was placed approximately $3\frac{1}{2}$ ft. from the speaker and on the speaker axis and was partially enclosed by an acoustically insulated hood to reduce the effect of reflections from the wall. In this manner, acoustical characteristics (peaks and valleys in the frequency response curve) which were attributable to the particular configuration of the room and speaker enclosure appeared on each response curve taken and due allowance was

made for these characteristic points as reflections of room and cabinet acoustics when judging a particular speaker.

The instrumental set-up for testing consisted of an oscillator, the output of which was fed through a high-fidelity amplifier to the speaker under test. The output of a calibrated microphone, which was used to pick up the acoustical output of the speaker, was fed through an amplifier into an analyzer. The above-mentioned instruments were of high quality and had minimum inherent distortion.

It should be noted that measured distortion, as mentioned in the ratings which follow, included distortion present in the complete testing equipment; this distortion, unavoidable in any complex electrical and acoustic network, was, however, quite low.

The irregularity of the response curves will often be misleading to the layman, as the peaks and valleys, unless they represent exceptionally steep transitions from high to low response, are smoothed out by the ear in hearing. It must be recalled, too, that the simple sounds which are used in the speaker testing are not those which the speaker is reproducing in practice, for in practical use, the speaker is nearly always handling multiple and complex tones.

It is suggested that any consumer interested in obtaining

any high-priced speaker or speaker-system purchase it on a trial basis if possible.

A. Recommended

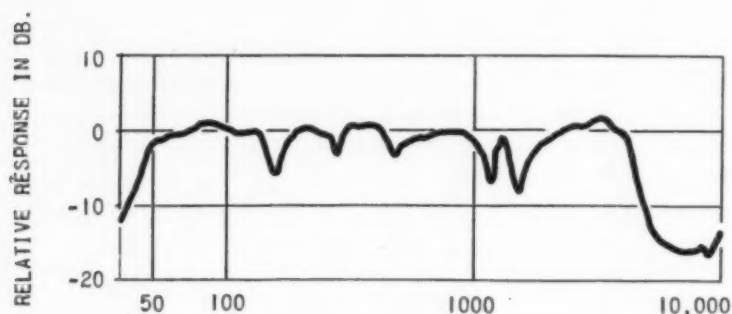
Altec Lansing Dia-Cone, Model 600 (Altec Lansing Corp., 1161 N. Vine St., Hollywood 38) \$47.60. Rated power handling capacity, 20 watts.

Permanent magnet type. Overall diameter, $12\frac{1}{4}$ in. Aluminum voice coil 3 in. diameter (10 ohms impedance) to which was attached a domed aluminum alloy metal diaphragm for the high frequencies above about 2000 cycles and a seamless molded paper cone which was used for reproducing frequencies up to about 2000 cycles. The domed

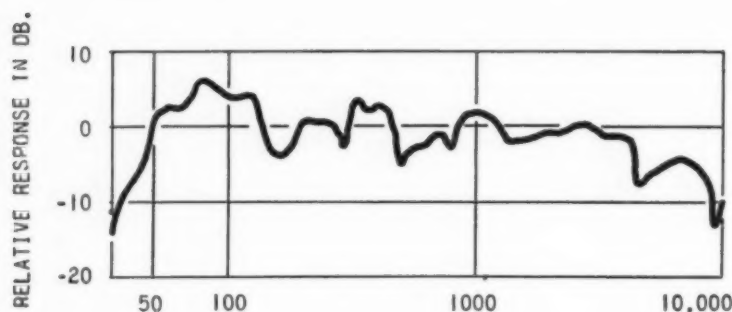
alloy diaphragm was extremely delicate and should not be touched even lightly with the fingers. This speaker appeared to give a little clearer reproduction than the *Western Electric*, and on listening tests it sounded slightly brighter (more realistic, with freedom from muffled quality), although it did not respond to so wide a range of frequencies. The general shape of the distortion-versus-frequency curve for this speaker was quite linear, and there was less than 5% distortion indicated in the region from 75 to 10,000 cycles and less than 3% from 100 to 6500 cycles. (See *Western Electric*, Model 728B, listing for remarks concerning enclosure, and attenuation at 155, 280, and 490 cycles.) 3

Jensen, Model HNP-51 Coaxial (Jensen Radio Manufacturing Co., 6607 S. Laramie Ave., Chicago 38) \$81.66. $15\frac{1}{8}$ -in. overall diameter, $10\frac{5}{8}$ -in. depth. Required a $13\frac{1}{2}$ -in. baffle opening. Unit consisted of a cone-type low-frequency section with a 2-in. diameter voice coil, together with compression type "horn-in-cone" high-frequency section integrally mounted on the same axis. The high-frequency control or roll-off circuit provided choice of four cut-off frequencies—15,000, 10,000, 7500, and 6000 cycles per second. Input impedance (to dividing network) 500 ohms. Rated power handling capacity, 25 watts. Frequency response curve showed a rather flat response with distortion less than 5% between 60 and 10,000 cycles at 1 watt input. Low-frequency distortion was indicated; it was due not to the speaker, but to hum in the amplifier unit used. In checking the instrumental measurements, it was noted that in listening tests on certain types of music, combination of tones resulted in distortion which was still apparent regardless of the audio amplifier that was used. This speaker, while not perfect, appears to give better results on certain types of music than any other speaker tested. It is recommended that the cabinet size be not less than 8 cu. ft., preferably 10 (considerably larger than the cabinets commercially supplied). 3

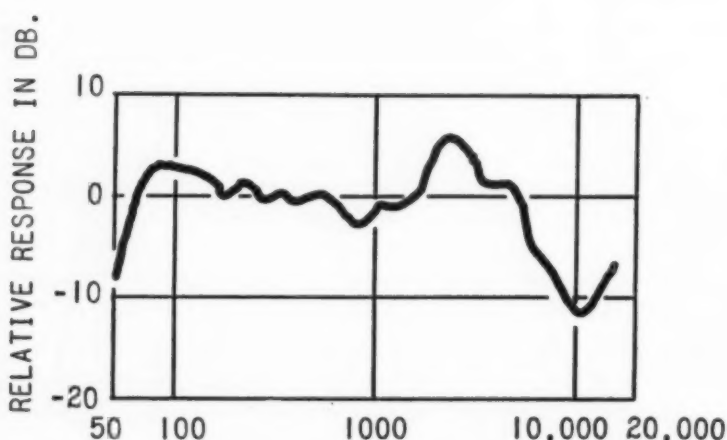
Western Electric, Model 728B (Distributed by Graybar Electric Co., 420 Lexington Ave., New York 17) \$103.60. Single direct radiator type. Overall diameter $12\frac{3}{8}$ in., depth $3\frac{3}{4}$ in., weight 17 lb. Required an



FREQUENCY, CYCLES PER SECOND



FREQUENCY, CYCLES PER SECOND



FREQUENCY, CYCLES PER SECOND

Smoothed curves showing relative response (acoustic output) in db. for the frequency range as shown for the Altec Lansing, Model 600 (above); the Western Electric, Model 728B (at the middle); and the Jensen HNP-51 (below).

11-in. diameter hole in baffle. Rated power handling capacity, 30 watts. Voice coil impedance, 4 ohms. Reproduction considered not quite as clear as *Altec Lansing*, Model 600. Bass response was slightly heavy even when amplifier was operated with the tone controls adjusted for linear response. On listening tests this speaker did not sound quite as "bright" as the *Altec 600* even though its frequency response range as measured was greater. Its performance, however, was much like that of the *Altec*, and except on voice, it was difficult to choose between them. Was well built. Though the dips in the response curve at 155, 280, and 490 cycles shown in the graph for the 728B were not apparent in the *Jensen HNP-51* curve, they appeared to be due to acoustic characteristics of the room or speaker enclosure. For the test, this speaker was mounted in an enclosure of approximately 4 cu. ft. (Western Electric recommended at least 2½ cu. ft. enclosure be used.) Though this speaker has been recommended as a full-range speaker, present Western Electric advertising is inconsistent in recommending use of the 728B speaker in combination with the 713B (for frequencies from 500 to 15,000 cycles), the two mounted in a single unit constituting the 757A speaker.

3

Two AM-FM Phonograph Combinations

At a price of \$350 one should expect a completely engineered radio receiver which would not only give a wide frequency response—at least from 40 to 7500 cycles, when measured electrically—but would also have stable tuning qualities and the other desirable characteristics that would go with a superior set. There was found to be considerable distortion in the *GE 417*, below 200 cycles, with reception in either the FM or AM channel. Power output fell off rapidly below 200 cycles from a figure of about 4 watts to less than 1 watt around 60 cycles. (A first-class receiver should produce

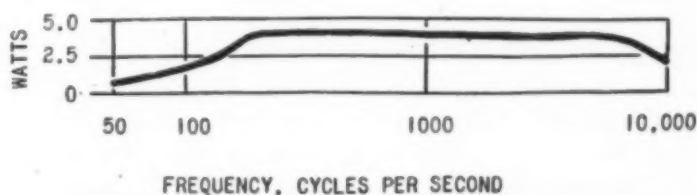
its maximum power output with a distortion of not over 5 db. down at least as far as 100 cycles, before there is a noticeable falling off of watts delivered to the voice coil of the speaker.) When tuning in stations, the r.f. section of this set was found to be unstable and subject to whistling noises. (This may have been a result of the high signal level present in the suburban area in which the set was tested.)

The FM section used a single limiter stage and performed satisfactorily down to a signal strength of approximately 100 microvolts. When signal strength fell below this value, considerable distortion was present, and this distortion increased as the signal strength decreased. (The better FM circuits provide a double limiter stage.) The FM output was found to be quite linear; distortion at 400 cycles with 75 kc. deviation was only 2% for a signal strength of 100 microvolts and above. This set incorporated the use of a variable inductance tuner (styled "guillotine" tuning by General Electric in its literature, and supposed to be suited to the 88 to 108 megacycle band) instead of the usual gang condenser. This method is comparatively new, and the development of this type of tuning may not have been sufficiently far advanced, as the tuning method did not work in a fully satisfactory fashion. The develop-

ment of satisfactory tuning means for the new band has presented serious difficulties to designers of FM receivers, and there is reason to believe the problem has not yet been satisfactorily solved by the manufacturers. A single tube of 6V6 type was used as the power-amplifier output tube, and this gave only 4 watts at 5% distortion. This is not quite enough for high-fidelity reproduction unless in a rather small room or in an apartment house. CR considers that a minimum of about 10 watts should be available and that a beam power tube (or a push-pull pair of such tubes) is not best suited for the output stage of a receiver whose manufacturer aims at high-fidelity performance. (Ordinarily one or two watts are sufficient, but occasional peaks in orchestral programs require an output of from 8 to 15 watts; the figure of 10 watts, approximately, may be considered generally satisfactory.)

B. Intermediate

General Electric, Model 417 (General Electric Co., Bridgeport, Conn.) \$349.50. 105 to 125 volts, 60 cycles a-c only. Console was 35¼ in. x 35 in. x 17½ in. in size and included two record storage compartments each 19 in. high, 7½ in. wide, and 14½ in. deep. 10 tubes (including rectifier and phono-preamplifier). Superheterodyne circuit used. Covers broadcast band from 540 to 1600 kc., short wave from 9.4 to 9.9 and 11.6 to 12.2 mc., and FM bands from 42 to 50 and 88 to 108 mc. Both manual and push-button tuning pro-



Curve showing power output at various frequencies at 5% total harmonic distortion for the General Electric, Model 417. The falling off at the higher frequencies begins at about 5500 cycles per second.

vided. Self-contained loop antenna. Provision made for external AM and FM antennas. Utilized 5 controls—tuning, volume, band selector, 3-position bass, and 3-position treble. Speaker of the permanent-magnet type (12-in. diameter), GE's own make. Parts and workmanship of average quality. Sensitivity and selectivity were found to be fair to satisfactory. Spurious responses noted were excessive, being present about every 10 kc. throughout tuning range on AM. Probable ease of servicing, satisfactory. Acoustical quality by listening tests was rated only fair. Approximate electrical fidelity range 25 to 5000 on AM, 25 to 13,000 on FM (good). Power output at 5% distortion, 4 watts at 400 cycles. Maximum power output, 6.4 watts (at 27% [very high] distortion). Residual noise level, not annoying (—50 db.). Automatic record player, apparently made by General Instrument Corp., had a capacity of 12 10-in. records or ten 12-in. records. 1¼-oz. needle pressure (satisfactorily low). Permanent sapphire needle used. It was necessary to detune the radio while the record player was in use to eliminate the sound of radio broadcasts in the background. No shock hazard found. Carried Underwriters' Laboratories' label. This combination may possibly be satisfactory for use in small apartments where conditions would in any event require operation at low sound level. It would not be satisfactory for use of persons who are so situated that they can enjoy the more faithful reproduction of orchestral music which is possible when somewhat greater levels of audio output are available.

* * *

The following report on the *Magnavox Regency* contains the results of tests which had not been completed at the time the preliminary rating was given in CR's BULLETIN, May 1947, page 9.

The *Magnavox Regency* was a combination AM, short-wave, and FM console model superheterodyne which included a record player, with changer. Three separate chassis were used. The AM and short-wave

sections were in one chassis, which incorporated an r.f. amplifier, a mixer, an i.f. amplifier, detector, and two audio stages. Power for this chassis was supplied from the amplifier chassis, which, in addition to the rectifying tubes, contained four 6V6GT's connected in push-pull parallel for final audio output. The six stages in the FM chassis were an r.f., converter, two i.f.'s, a limiter, and the detector or discriminator. This chassis included its own power supply.

The speaker system consisted of two 12-in. PM speakers, which appeared to be of the same design as those used by Magnavox several years ago. They were considered not to come up to the standards necessary for FM or high-fidelity recordings and their tone seemed somewhat harsh when compared to the best speakers so far tested. The listening qualities of this set, however, were considered to compare favorably with the average receiver as now manufactured although not as good as the *Scott* (which is priced at a figure more than 100% higher). Provision was made on the amplifier chassis for connecting an extension speaker line. (A note in the *Magnavox Service Bulletin* mentioned high-fidelity permanent-magnet extension speakers as available through all authorized *Magnavox* dealers.)

The console was well built and nicely finished. The record changer was an improved model (tone arm bearing improved) of the *Webster 56* reported in CR's May 1947 BULLETIN. Considerable acoustic feedback was noticed when the bass control was advanced too far. It is felt that the manufacturer should have provided for better iso-

lation of the speaker system from the record changer.

B. Intermediate

Magnavox, Regency Symphony 155BF, Radio Phonograph Combination (*Magnavox Co.*, Fort Wayne, Ind.) \$492. Superheterodyne circuit using 21 tubes, including 3 rectifiers and 2 tuning indicators. Separate chassis for: AM and short wave; FM; audio amplifier, power supply. Two 12-in. speakers used. Used *Webster 56* record changer with *Astatic MLP-2* pickup and "permanent" needle. A second (replacement) FM tuner (that in first sample tested was defective), performed very well. It had good stability and very little distortion at signal inputs above 20 microvolts. The tuning of this unit was somewhat critical if distortion was to be kept at a minimum. The *Regency* would have received an A rating if the acoustic feedback condition had been absent. (Additional information on this set will be found in CR's May 1947 BULLETIN, page 9.) 3

Two Tuners

A. Recommended

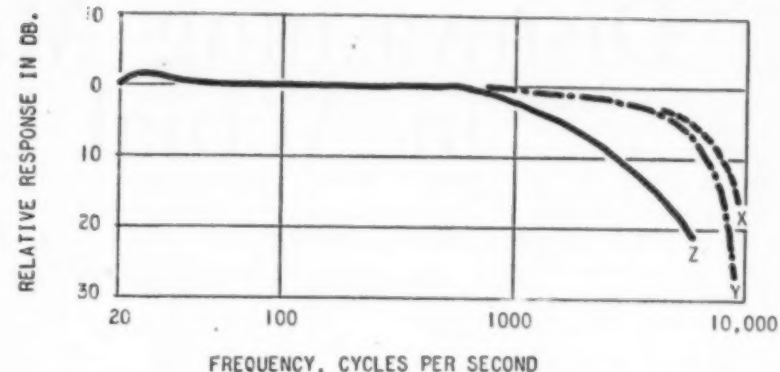
Collins Broadcast Tuner (*Collins Audio Products Co.*, 126 Park St., Westfield, N. J.) \$110.25, less tubes. (High level output transformer supplied at extra cost.) For 110-volt, 60-cycle a-c operation. A tuned radio frequency circuit (much the best type for high-fidelity tuners) covering the broadcast band from 540 to 1700 kc. Utilized 8 tubes including the tuning eye, the rectifier, and the r.f. bias voltage regulator. Parts of excellent quality, and workmanship and accessibility for servicing very good. Fidelity characteristics excellent. Audio frequency range (over which the response was not more than 10 db. below the response at 400 cycles) was 20 to 7600 cps. (quite exceptional, and ample for the best AM broadcasting as now practiced). Rated output 15 volts at 2% distortion, maximum output 40 volts at 5% distortion (both ample). Selectivity and sensitivity satisfactory. (It is important to note that high fidelity and high selectivity are not compatible, and if high fidelity is desired in an AM receiver, relatively poor selectivity must be toler-

ated.) This tuner is designed to provide the best available high-fidelity response from local, amplitude-modulated (AM) broadcast signals; it is therefore not suitable for distant reception nor for use in areas in which many stations of approximately equal signal strength are received throughout the tuning range or several important stations are close together in some part of the range. In combination with the *Brook 10C2* amplifier and the *Jensen 11VP-51* speaker, this tuner produced superb radio reproduction (best so far heard), and if the alignment had been satisfactory, it would have received an *AA3* rating. 3

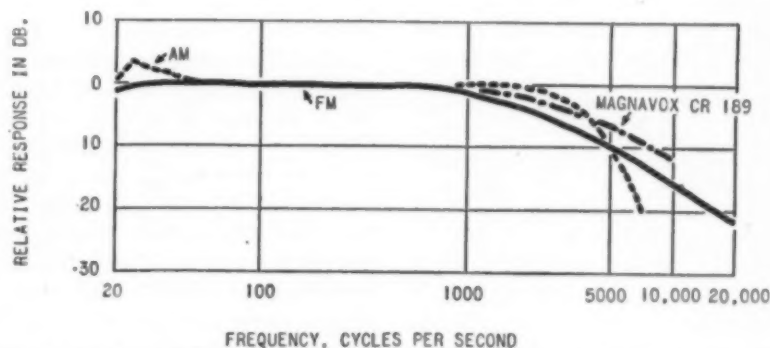
A *Collins* AM-FM combination tuner is now available (\$175).

B. Intermediate

Browning Universal Tuner (Browning Laboratories, Winchester, Mass.) \$143.90 for tuner only. Power supply \$15.78 extra. For 110-volt, 60-cycle operation only. Overall size of tuner chassis 8 in. high, 13½ in. wide, 9½ in. deep. Covered AM band from 550 to 1600 kc. and FM band from 88 to 109 mc. Separate superheterodyne circuits used in the two tuners. AM section: an r.f. stage, a mixer stage, and an i.f. and detector stage. FM section: one r.f., a mixer, an oscillator, two i.f., two limiters, and a discriminator. Controls: volume, band switch, tuning, and on-off switch. Tuning was manual (straight line dial). Apparent quality of parts, workmanship, and accessibility for servicing were all good. Sensitivity was good and selectivity excellent. Faint spurious responses were noticed at 550, 700, 1125, 1175, 1240, and 1470 kc. Audio frequency range over which the response was not more than 10 db. below the response at 400 cps.: for FM, 20 to 10,000 cps. (good); for AM, 20 to 5000 cps. (not considered adequate for an AM



Curves showing fidelity characteristics of the Collins AM Broadcast Tuner: x — with tone control at "maximum" position, y — with 10 kc. p'ter in (use often necessary to suppress intersation interference), and z — with tone control at minimum position (maximum cut off of the higher frequencies).



Curves showing electrical fidelity characteristics of the Browning Universal Tuner for both AM and FM reception. The curve for the Magnavox CR-189 is included for comparison purposes. This is the FM section of the Magnavox Regency Symphony 155BF reported in this Bulletin and in the May 1947 Bulletin.

tuner offered for high-fidelity service; the tuner was advertised as such). Maximum voltage output approximately 1 volt (ample). The FM section was apparently out of alignment when received for test, as distortion was in evidence. If properly aligned, the FM unit would

probably be satisfactory, as it was quite sensitive. (Limiter action, however, was not as effective as is desirable.) It is suggested that any consumer interested in obtaining this tuner purchase it on a trial basis if possible, to avoid the risk of obtaining an incorrectly adjusted unit. 3

★ ★ Corrections and Emendations to Consumers' Research Bulletins ★ ★

Portable Typewriters
Page 8
August '47

the operator." "Touch Control" is the registered trade name of the particular device used by the

The first sentence of second paragraph should be changed to read, "All machines continue to be equipped with devices permitting some adjustment of the key tension by the operator." "Touch Control" is the registered trade name of the particular device used by the

Royal Typewriter Co. for key-tension adjustment and the term is therefore not applicable to machines of other makes.

Col. 380, top line ACB '46-'47 The first word in the sentence should be "tyrothricin," not "tyrothrein."

Dishwashing Machines in Actual Use

*If You Are Going to Buy, a Dishwasher of
the Automatic Type Will Be Best*

AFTER being studied for technical and engineering characteristics, the dishwashing machines reported upon in the August 1947 BULLETIN were put into use in home kitchens, and in the course of such use, some interesting points came to light, some of which are somewhat at variance with statements made in the article in the August BULLETIN.

An automatic dishwasher, if it does a good job, will save effort, and possibly time, even in families of less than five, and will save both time and effort in large families, provided the capacity is large enough to take care of all of the dishes for a meal in one load. In the small family it is probably more practical to rinse very dirty pots and pans, place them in the bottom of the dishwasher, and wash them with the rest of the dirty utensils and dishes at the end of the meal. In a large family where the whole capacity of the dishwasher would be needed for the dishes and silverware, the cooking utensils could be placed in the machine and be ready to take out by the time the family had finished eating. This would leave the machine ready for the main dishwashing job at the end of the meal but the machines are rather noisy, and some families might find it annoying to have the appliance running during mealtime.

Inasmuch as the automatic machines tested, after loading, proceed with no attention from the operator, and even open automatically at the start of the drying period, the length of the cycle is usually not important. If the oper-

ator can load the machine, put in the detergent, start the operation, and then proceed to do other work, it makes very little difference whether the machine works for half an hour or for 10 minutes, provided that when the user comes back to put the dishes away or pick them up to use, they are clean and dry.

With this type of dishwasher, there would seem to be no practical advantage in holding a day's dishes to be done at one session; in fact, there might be actually some loss of time, as loading the machine might take longer with the problem of properly distributing a whole day's dishes than if the operator just put each meal's dishes into the machine, turned the switch, and left them.

Dishmatic

The Dishmatic was the only machine tested which heated its own water. It was necessary to have it connected to the power supply long enough before the actual dishwashing operation to have the water good and hot (somewhat less than an hour). In most homes the heater would be left on continuously for convenience as the approximate cost of running the heating unit alone is only about 90c a month at 3.5c per kilowatt-hour.

The automatic timing cycle is approximately half an hour, during which time the dishes are washed, rinsed, and dried. During the last operation, which takes about one-third the total time, the lid opens automatically and the steam is expelled by the impeller which continues to operate for the

full time fanning hot air over the dishes. The dishwashing results were very good; all of the dishes, including the glasses, were clean and dry, but the silverware had to be rinsed off by hand, to dispose of some remaining food residues. When the time of the cycle was reduced about one-half, results of the washing were not so satisfactory; with this reduced time, the operator's presence was required to turn the control dial at the proper moment. This procedure did not seem reasonable, since more of the operator's own time was required and it did not seem likely that shortening of the total operating time and thereby lose the advantage of automatic operation and best results in dishwashing would often be desirable or practical.

General Electric

The General Electric machine proved rather disappointing in practical use. The brightly-plated wire trays were better finished than those of the Dishmatic; the pre-rinse period, the business-like sound of the hot-water spraying forcefully over the dishes, and the double rinsing at the end of the cycle all suggested that results would be very good; actually they were not.

As normally operated, the machine stops after 10 or 11 minutes at the end of the washing-rinsing period, the lid opens, and the dishes are supposed to dry in their own heat. In using the machine under test, directions were followed exactly, and half an hour after the end of the operating period, the dishes and silverware were

ST. PAUL, MINNESOTA

removed for examination, which disclosed the following: the glasses with cupped bottoms (many glasses have them) had little pools of water standing in the hollows. It is doubtful if these pieces would have dried even if left until the next mealtime. In addition, many of the glasses had food residues in them evidently thrown up by the water from the plates in the lower tray and not washed or rinsed away during the rest of the cleansing and rinsing operations. Results on the dishes (plates, saucers, etc.) were fairly good, but far from perfect; water, spilled from the bottoms of the glasses as they were removed from the upper tray, splashed over the dry dishes below so that some of them also had to be wiped by hand. The manufacturer, we think, would be well advised to do some further development work on the method of placing the glasses so that they would be washed really clean and could dry properly. (Some of the ones washed in this test were less clean at the end of the washing period than at the beginning.) Results with the silverware were poor also.

* * *

Non-automatic dishwashers have the great disadvantage of requiring the user's attention throughout the operating period, to turn the switch at the proper time, add detergent, and open the lid, etc. With this type, large capacity is particularly important because, if more than one load is required to clean up the dishes for a meal, there is almost no saving in time over washing by hand. If the dishes don't dry properly, and have to be dried by hand, as sometimes happens, there is little saving in effort.

If used in a small family of two or three, worthwhile savings in time with a non-automatic dishwasher could be accomplished only by packing a day's dishes in the dishwasher and making a single job of it.

Thor

The *Thor* had a large enough capacity to make it as practical

in this respect as non-automatic dishwashers go, and it also did a fairly satisfactory job of dishwashing. This machine was a combination clothes and dishwasher, converted from one to the other by removing the parts (tub, agitator, trays, etc.) necessary for operation as one type and replacing them by the parts for the other. From a cost standpoint, this was a very good arrangement, as a single motor and cabinet could be used for two major appliances, but both sets of parts were large and cumbersome and, the washer tub was particularly awkward to handle. In one instance brought to our attention by a county home demonstration agent, the housewife found it so difficult or troublesome to lift out these large accessories that she had to wait until her husband came home to convert from one appliance to another. In addition, a sizeable space would be needed for storing whichever set of parts was not in use, which would pose a problem in many kitchens. Just how much of a problem may be easily judged from the dimensions of the largest pieces — the dishwasher tub is about 21 inches in diameter (outside) and 16 inches deep, and weighs 10½ pounds, while the washer insert has approximately the same measurements and weighs about 23 pounds. It would take an exceptionally spacious kitchen cabinet to hold such items as these, and left outside, they would get dirty, be unsightly, and would be in the way.

Kaiser

Except that it was well made, the *Kaiser* had little to recommend it. Its small size would make it impossible to do both dishes and an ordinary number of cooking utensils at one time for even a small family since a capacity load was as follows: 3 dinner plates, 3 dessert plates, 3 cups, 3 saucers, 1 cereal dish, 1 small vegetable dish, a handful of table silver—say 12 pieces.

The operator's attention was required almost constantly, the

longest interval of inaction being the 3-minute washing period, and 3 minutes is too short a time to permit one to accomplish much at another task. As the dishes were not dry at the end of the final spinning period, they could not be removed then to make room for a load of utensils. This left the user with the alternative of washing the pots and pans and remaining serving dishes, etc., by hand, or of letting them stand until the first load of dishes finally dried and could be taken out. In neither case would there seem to be any appreciable saving in time over doing the dishes by hand.

Effectiveness in washing was found poor, even though the water pressure indicated in the direction leaflet was used, and dirty plates were scraped carefully before placing them in the dishwasher. The remaining food residues were in several cases transferred from dirty to fairly clean plates during the washing process, and the machine's rinsing action was ineffectual in removing them. Using a longer operating cycle was precluded by the large amount of hot water required—approximately 9 gallons for the manufacturer's suggested operating time—which would be enough of a strain on any normal water supply.

* * *

All the machines studied need to be permanently connected to the house water supply and drainage systems for best results. This will entail considerable expense beyond the cost of the machine, and in many cases might require extensive changes in wiring and piping and arrangements and possibly carpentry work also. The *Dishmatic* and the *GE* machines have been installed in private homes where their performance under actual home conditions over a fairly long period will be observed, and reported to subscribers.

Ratings are cr47. (For description of the machines, see August 1947 BULLETIN.)

B. Intermediate

Dishamatic (Lake State Products, Inc., Jackson, Mich.) \$224. Automatic. Dishwashing results under ordinary home conditions: excellent for dishes, only fair for silverware. (This machine was one of the early models; a later model said to contain a number of improvements is now being tested.)

General Electric Automatic, Model BE 646 (General Electric Co., Bridgeport, Conn.) \$224.50. Automatic. Dishwashing results with dishes, fair; with drinking glasses, poor. Glasses were not dry after standing 30 minutes following end of washing-

rinsing period. Food residues from lower tray of dishes were thrown up into the glasses and were not removed during the rinsing period.

Thor Automagic Combination Clothes Washer and Dishwasher, Model 200 (Hurley Machine Div., Electric Household Utilities Corp., Chicago) \$169.50 for washer, plus \$59.95 for dishwasher attachments. Non-automatic, which experience indicates is a great disadvantage. Dishwashing results fairly good and capacity sufficient to make washer of practical use in many families. Large size of the parts which must be taken care of when a given set is not in use,

would tax the storage facilities of most kitchens (see text). Removing one set of parts to insert the other was judged somewhat difficult in actual use.

C. Not Recommended

Kaiser Hydraulic (Kaiser Fleetwings, Inc., Bristol, Pa.) \$127.15 without cabinet. Non-automatic, a great disadvantage. Dishes did not become dry during final spinning period. Dishwashing results, poor. Capacity judged too limited for practical use even in most small families. Large amount of hot water used, and water pressure required, would be drawbacks in many homes.

★ ★ ★
IN February of this year, Edwin Land of Polaroid Corporation announced a new method by which a picture could be exposed and finished, and a print obtained within one minute after exposure. This invention received much publicity and apparently considerable interest was shown by persons who would like to own a camera equipped for making pictures by this process.

On May 18, an advertisement by Gimbels department store in the New York Times offered at \$12.95 a camera, together with a processing tank, by means of which prints could be made in less than 10 minutes. This camera was not, however, the Land invention, or anything remotely like it, although many persons who read the advertisement would have been led to believe it was a camera of the Land type or one operating on a similar principle.

The advertised camera, called *Speed-O-Matic*, made by the Speed-O-Matic Corp., Boston, Mass., is of an inferior fixed-focus type, with single lens and one shutter speed. Pictures, each 2 in. x 3 in., are made on sensitized paper, two pieces of

The *Speed-O-Matic* Camera

which are contained in each pack. When both exposures have been made, the pack is processed in a tank which is supplied with the camera. The method by which the print is produced is nothing more than "image reversal processing" (changing the negative to a positive image), which has been known for more than 100 years; it is far from being the important and novel invention which the advertising implied. With the reversal process there are no negatives for the photographer's future use in making prints; however, the manufacturer offers a reprint service—3 reprints each 3 in. x 5 in. for 25c.

The procedure consists of immersing the pack (in the tank) for a specified time in each of 4 solutions in succession, with a rinse after each solution. The user of the camera must there-

fore have at hand at least 5 containers, one for each solution and one for the water to be used for rinsing. The implication in the advertising that with this camera one can "snap, develop and print on the spot" thus assumed that the "spot" is so chosen that these containers can be kept handy, or that the user is willing to tote them to the "spot." In either case, it is quite a different proposition from the Land process, in which the finished print is produced without the necessity for any equipment other than the camera and the special film which the Land method uses.

Another disadvantage of the *Speed-O-Matic* camera and process is that the pictures are reversed, left to right.

CR recommends that consumers stick to more familiar methods of making pictures on standard negative material with subsequent printing from negatives, at least until a really satisfactory substitute is available, and not to believe what the advertising they read seems to say, or imply, about new photographic methods and processes, unless in a position to check on the facts behind the claims.

A Report on the Mail-A-Voice Magnetic Recorder

THE *Mail-A-Voice* magnetic recorder is a self-contained recorder-reproducer which is intended primarily for voice messages. The basic principle upon which magnetic recorders operate is an old one, but there is a great deal of inventive activity in this field just now, and new models are being brought out every few weeks.

Very recent developments have so improved the available frequency response and at the same time reduced background noise and distortion, that it may perhaps be expected that the best of such units will at some future time compete to some extent with the other types of recorders and with reproducers using shellac and plastic disks.

The *Mail-A-Voice* unit consisted of a small metal carrying case roughly 6 in. x 11 in. x 12 in., in which were mounted a regular phonograph turntable, the pickup arm, the controls, and the electronic equipment (rectifier and amplifier). The paper recording blank (9 in. in diameter), which was coated very thinly with a finely powdered magnetic material and its binder, was laid on the turntable just as a record is put on the usual phonograph.

In preliminary tests, several persons made recordings with the *Mail-A-Voice* and these recordings were then played back and judged as to clarity, distortion, and other factors. It was found that considerable background noise and distortion were present; this, with the relatively narrow frequency

response, made it quite difficult to recognize a person's voice. It was also found that there were cases in which certain words were not entirely distinguishable due to the distortion produced by the unit. A recording was sent through the mails; this showed about the

same volume and intelligibility as when played back immediately after it was recorded.

It is CR's opinion that this unit, even in its present stage of development, would be useful to a blind person or anyone who is unable to correspond in the usual manner with pen and



paper because of some handicap. It would also be of use at times for other correspondents, perhaps, but would not, we believe, be found fully satisfactory for general or frequent use. It is to be hoped that the design will be greatly improved upon in the immediate future, as the present development of the device seems to lack a good deal of being as generally useful and satisfactory as one might expect.

CR will report on a number of other voice recorders and instruments recording music on wire and tape, as they become available and when on preliminary study they seem to offer

important possibilities for usefulness and good performance.

C. Not Recommended

Mail-A-Voice Magnetic Recorder, Model BK-501 (The Brush Development Co., 3405 Perkins Ave., Cleveland 14) \$49.50 when purchased. (Later listed at \$59.) 5 recording blanks included. (Extra recording blanks, 20 for \$1.45.) Erasing bar and headband for holding the earphone are accessories for which an extra charge is made. Reproduces voice frequency range only (with considerable distortion). 115 volts 60 cycles. Power, 27 to 31 watts. Circuit used one full wave rectifier and two twin-triodes. Both sections of one twin-triode tube were connected as straight amplifiers. One section of the second twin-triode was used as an amplifier and supplied recording current to the recording head, the other section was used as

part of a supersonic oscillator (regularly used on recorders to supply a bias current which, when used in combination with the signal current, tends to reduce the distortion and noise level). Recording time 3 minutes approximately. Weight, 13 lb. Leakage current slightly excessive. The case and all exposed metal parts showed this leakage current, particularly the metal bracket which was used to fasten the lead wire to the headphone. No Underwriters' label. Servicing would be rather difficult. The turntable created an intermittent squeaking noise in use which was annoying. This recorder is also now available in *Model BK-502* (similar to *BK-501*) without volume control and box cover, at \$39. *Model BK-503* at \$97 appeared to be the same recorder with "standard accessories for dictation and transcription purposes provided."

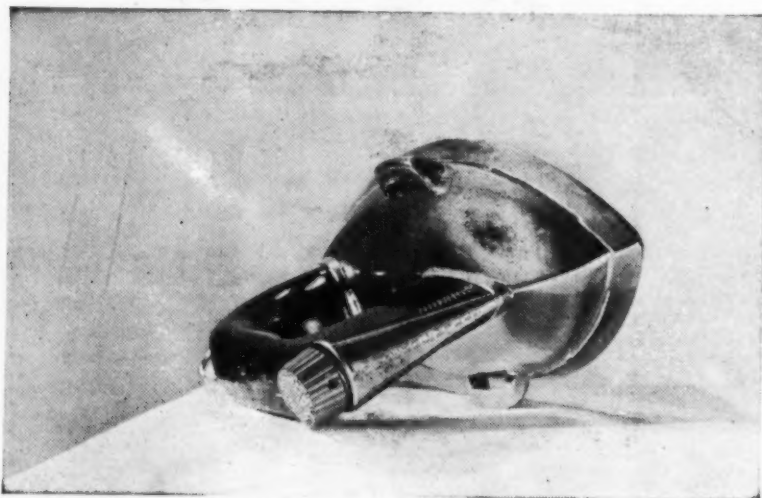
Three Electric Irons and A Steam Iron

IN the post-war period Consumers' Research has almost never been able to buy all the items desired for a test, at the same time, and electric irons are an example of this difficulty

and the corresponding delays. In some cases months have elapsed between the appearance of advertising and the actual availability of the irons for our tests. It is expected that it

will be possible to purchase a larger group of representative brands of irons during the coming fall, and if so a more comprehensive test will be carried out at that time.

The present study adds three more automatic irons to the reports on those that have already been investigated. The tests were conducted in the same manner as the irons reported upon previously: Temperature measurements were made on the sole plate at different thermostat settings, on the shell, and on the thermostat control knob. Sole plate area was determined; current leakage was measured; and the irons were given the standard proof-voltage test; the findings on these points were satisfactory unless otherwise noted in



General Mills Tru-Heat, Model GM-1A

the listings. Measured wattages are shown in the listings in parentheses following the rated wattages. The irons were critically examined for workmanship and construction and were given a practical use test by six experienced ironers each of whom reported her experiences.

The *General Mills Tru-Heat* iron has some innovations in design which made it a controversial item in the use tests. Its most important differences from the conventional iron were the oval shape of the back of the sole plate and the "side-rest" position which this design made necessary. The chief objection was in respect to the resting position. Several experienced users judged that there was no saving in physical effort in the unaccustomed turning motion of the wrist, required in laying the iron on its side, as compared with the motion normally used with the other type of iron to turn it on its back rest. There was no doubt an element of habit in this problem since several of those long accustomed to reaching without looking for the handle of a standing iron, struck the sole plate of the *Tru-Heat* and received slight burns. Opinions differed on the shape of the *Tru-Heat* sole plate. One user found the rounded back an advantage when ironing long full sleeves but another felt it would have been much more useful with a point at the rear and that the front should have a sharper point also in order to be really useful on finely gathered pieces. Those who have learned to make good use of the conventional squared back of the standard iron, did not like the rounded shape of the *Tru-Heat*. It was well made of good materials and



Arvin, Model 2200

had many favorable qualities. It was judged likely that points which appeared to be disadvantageous during the use tests might be overcome completely, or nearly so, when users became accustomed to its shape and action.

B. Intermediate

Arvin, Model 2200 (Noblitt-Sparks Industries, Inc., Columbus, Ind.) \$10.65. Weight, including cord, 3 lb. 7 oz. Rated watts, 1000 (949). Sole plate area, 26 sq. in. Sole plate

highly polished cast aluminum (more readily scratched than chromium-plated steel). Handle of molded plastic, ventilated; there was no thumb rest; space between handle and regulator rather small, but probably unobjectionable, as control dial did not overheat. Non-detachable cord of good quality, attached with metal spring joint at right-hand side of handle. Temperature of shell sufficiently low for comfortable ironing. Speed of heating, good; evenness of heating, very good. Temperature of sole plate too low at rayon, silk, cotton, and linen settings. Electrical current leakage above recog-



General Mills Tru-Heat, Model GM-A1

nized limits in iron as received; was satisfactory later. Quality of materials, excellent. Cast-in heating element replaceable only at the factory. Results of practical ironing tests, only fair; users found the *Arvin* awkward to operate. 2

General Mills Tru-Iron, Model GM-1A (General Mills Inc., Minneapolis 13) \$11.50. Weight, including cord, 4 lb. 3 oz. Rated wattage, 1100 (1040). Underwriters' Laboratory-approved. Sole plate with area of over 28 sq. in., highly polished chromium-plated steel. Handle of molded bakelite, ventilated (spaced away from shell); there was no thumb rest (some like a thumb rest and others do not care for one). Non-detachable cord of good quality, UL-approved, attached to center of handle at rear. Temperature of shell (part above sole plate) above average but judged sufficiently low for comfortable ironing; however, one user found it uncomfortably warm after prolonged use at the "linen" setting. Speed of heating, good. Evenness of heating, very good. Quality of materials, good. Thermostat was of complicated design but seemed to serve its purpose satisfactorily. Thermostat control knob not secure (worked loose during test). Temperatures of the sole plate at the marked settings for rayon and linen met certain reasonable standards but the temperature at the "cotton" setting was somewhat low. The sole plate temperatures did not correspond to temperatures marked on control knob, but iron was found to give useful

ironing temperatures for the various types of material as marked, in actual ironing tests. Current was actually on when knob was in "off" position in the sample tested. Complete disassembly required if repairs are needed. Some users found the double-tapered sole plate an advantage but others found preferable and useful the squared back of the conventional iron. Most users agreed that considerable use would be required before the "side-rest" position of the iron would seem as convenient as the back rest position to which women generally have become accustomed. Might warrant an A rating if control knob were fastened to its spindle more securely and iron shut off with knob in "off" position. 2

C. Not Recommended

Glide-O-Matic, Cat. No. 1C-01 (Century Precision Works, Inc., 503-7 W. 56 St., New York 19) \$9.95. Weight, including cord, 3 lb. 4 oz. Rated watts, 1000 (975). Sole plate area, 24 sq. in. Sole plate, polished cast aluminum (more readily scratched than chromium-plated steel). Handle of molded bakelite, ventilated, lacked thumb rest. Non-detachable cord of good quality. Sole plate temperatures much below reasonable standards at rayon, silk, cotton, and linen settings. The iron reached its maximum temperature (320°F) in 2 minutes 25 seconds but as this temperature was much below maximum temperatures attained in other irons tested, the heating speed

of the *Glide-O-Matic* cannot properly be compared with that of other irons. Evenness of heating, very good. Quality of materials, fairly good. Heating element could be replaced only at the factory but iron was otherwise easy to repair. Results of practical ironing tests, poor. In spite of its light weight, the iron seemed clumsy in use and required much effort. 2

Steam Iron

AS many subscribers have inquired about the *Silex* electric steam iron, CR recently purchased one for test. The following brief report is based upon tests and an engineering inspection. The iron is well made and comparatively light for a steam iron, its weight (empty), including cord, being 4 pounds and 7 ounces, but like all steam irons, it was cumbersome and awkward to handle. It was of the "wet-or-dry" type noted in previous articles as more desirable than the straight steam iron. The iron was well insulated with the use of porcelain beads and mica; the line cord connection was well executed, and unlike some steam irons, the iron was so constructed that it could be completely disassembled by the removal of 8 machine screws, so that all parts could be quickly and easily serviced.

The steam exhaust port was placed at the front of the iron and, although the instructions received with the iron stated that the change-over from steam to dry operation could be made while ironing, actually some caution might be needed, for at high heat, if the control lever were turned to the dry from the wet position, steam would spurt out a distance of approximately 2 feet in a forward direction.

Observations on Use Tests

The iron was used both as an



Glide-O-Matic, Cat. No. 1C-01

electric and as a steam iron on the following fabrics: white silk, rayon crepe, rayon satin, rayon sheer, medium weight rayon, cotton flock print, napped cotton, Bemberg sheer, and wool. Wrinkled pieces were sprinkled and ironed while damp when the iron was used as a dry iron. They were allowed to dry wrinkled before ironing with the iron used as a steam iron.

When used as a dry electric iron, ironing results were in general satisfactory except for the cotton flock print fabric, which had a rather poor appearance, and the medium weight rayon and napped cotton fabrics, which were only fair. At high heat the temperature of the shell directly below the handle averaged 440°F, causing considerable discomfort to the user. The temperature of the valve handle adjusting for wet or dry operation at this thermostat setting reached 230°F which is far above recognized limits (130°F for metal, 160°F for non-metallic parts) and much too hot to touch.

When used as a steam iron, 175 cc. (about $\frac{1}{3}$ pint) of distilled water at 79°F was used, which filled the iron to the lowest thread of the filling hole in accordance with directions received with the iron. At the highest setting of the thermostat, steam appeared in 4 min-

utes and 20 seconds and steaming continued for 11 minutes. At the medium setting, steaming started at 4 minutes and 40 seconds and continued for 13 minutes and 55 seconds. The adjustment of the iron at the lowest setting was evidently too low, for at that position of the control no steam had appeared even after the iron had been left heating for 30 minutes. At the high setting, the temperature of the shell di-



Silex duolectric Steam Iron

rectly under the handle was 220°F; this caused no discomfort to the user.

Laboratory ironing results agreed with those of previous tests of steam irons. Results were fair with the sheer rayon, the napped cotton, and the wool material. The wrinkles were not removed and the appearance was poor after ironing, of all the other samples. The moisture supplied by the

iron was insufficient to dampen the clothes thoroughly, as would be necessary to remove bad wrinkles.

Regular users of the iron report that, like other irons of its kind, it can be used successfully as a steam iron for a part of the weekly ironing and is quite satisfactory for ironing lightweight sheer rayons and rayon underwear (which are easily damaged by high heat) if they have been carefully hung for drying. They also report that the iron can be used as a steam iron for routine wool pressing jobs such as trousers, jackets, and the like.

For the rest of the week's ironing, the *Silex* can be used as a dry electric iron, but the very high shell temperatures found in the sample tested under that condition suggest that the user may find this iron uncomfortably hot for the hand.

B. Intermediate

Silex duolectric (The Silex Co., Hartford 2, Conn.) \$17.40. Fairly light weight, 4 lb. 7 oz. (empty). May be used either with or without the steaming feature (desirable). Equipped with thermostat. Temperature of shell much too high for comfortable ironing when iron was used dry at the high setting. Temperature of valve handle adjusting to wet or dry operation was far above accepted limits under the same conditions (see text). Ironing results when used dry, satisfactory; used as steam iron, unsatisfactory for some fabrics.

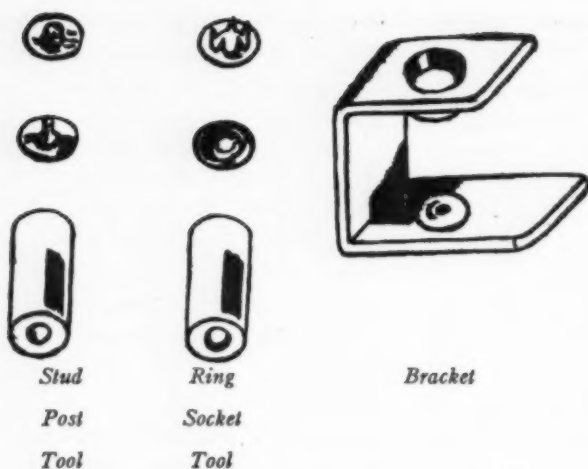
Dot Snappers Kit

A PRODUCT of definite, but perhaps somewhat limited usefulness, is the *Dot Snappers Kit*, No. 650, 95c, plus postage, made by United-Carr Fastener Corp., distri-

buted by John Dritz & Sons, New York 16, and listed in Sears-Roebuck's catalog as No. 25—3846.

The set purchased consisted of two punches and a die and anvil combination with a supply of fasteners, each fastener consisting of four parts: (1) a

ring; (2) a socket for the upper unit; (3) a stud; and (4) a post for the lower. As the distributor apparently counted the parts by weighing or other low-cost mechanical means, the number of units received in each package varies considerably. One package, for in-



Parts included in Dot Snappers Kit

stance, contained 25 rings, 20 sockets, 25 studs, and 28 posts. With these the purchaser would be able to assemble but 20 complete fasteners; but another box had 36 rings, 37 sockets, 36 posts, and 38 studs—parts for 36 fasteners; a third set had 29 posts and 24 each of the other parts making 24 complete fasteners possible. Refills supposedly containing parts

for 12 complete fasteners are 24c, plus postage; the two purchased contained 10 and 11 respectively. Besides the usual nickel finish, snap-pers are available in gilt, white, black, red, brown, blue, and green.

Excellent directions come with each kit, and anyone who follows them carefully can attach the fasteners in a professional manner. The fasteners are, however, of a large size suitable for mattress covers, slip covers, some types of uniforms and overalls, all articles made only occasionally in the home. For some of these uses (i.e., mattress and slip covers),

the fasteners appear to be far superior to other common types of closures. They could be used on children's pajamas or men's shorts of sturdy material but have such a strong grip that light material would not withstand the strain of opening them. Visibility of the ring on the upper side of the material would make them unsuitable for many uses.

For some people it would take about as long to apply a *Dot Snapper* as to sew on the ordinary type of snap fastener; attaching the *Dot Snappers* would probably take longer than attaching buttons and making buttonholes if buttonholes were made with a buttonhole attachment on a sewing machine.

The great advantage of using the fasteners wherever they are suitable is that once attached they are permanently secured and will not need replacing.

Facts and Fads in Garden Soil Management—III

By WARREN B. MACK, PH.D., THE PENNSYLVANIA STATE COLLEGE

Objections to the Use of Commercial Fertilizers and Green Manures

Objections to the use of inorganic fertilizers have been voiced ever since their introduction. When these have not been the expression of mere prejudice, they have been based generally upon instances in which fertilizers have either reduced yields or appeared to disadvantage in comparison with manures. Certain recent writers have cited numerous experiments in which such results have been obtained. In many cases the fertilizer which has appeared to disadvantage is ammonium sulphate, though others also are cited, including superphosphates.

It should be remembered, in considering these objections, that

Note: This is the concluding part of the article by Prof. Mack, of which previous installments appeared in the June and July 1947 BULLETINS.

soil scientists have known for many years the fact that ammonium sulphate increases soil acidity, and thereby renders a soil unproductive, but that addition of limestone offsets this disadvantage. Any nutrient, moreover, may reduce yields if it is applied when some other nutrient or nutrients are the ones most needed. In nearly every field plot experiment involving different fertilizer treatments that ever has been conducted, certain of the treatments have been found unfavorable, for various reasons, many of which have been discovered. If one

wishes to collect instances in which fertilizers have reduced yields, and does not scruple to select or discard evidence, he can build a case that is bound to impress the uninformed.

Similarly, objections to green manuring usually may be found to be based on the unfavorable effects of undecomposed woody material on crops planted too soon after the green manure has been plowed under; the causes of these effects are well known, and are avoidable.

It is well known by soil scientists that manure composts are practically foolproof, supplying as they do the nutrients required by plants in the proportions needed, and at rates which accelerate as the needs of the growing crop increase. It should be remembered,

however, that composts are not uniform in composition, because the plants involved in their production are influenced in their composition by the soils on which they are grown; composting cannot add iron, magnesium, phosphorus, or any other element which may be insufficient or lacking in a given soil. The proper use of inorganic fertilizers, on the other hand, requires knowledge of the nutrients required, their most effective proportions, and the rates at which they must be supplied at different times.

Other objections to inorganic or mineral fertilizers have been based on the supposed reduction in resistance of crop plants to diseases and insect infestation, and in an asserted inferiority in nutritive value of foods and feeds grown with inorganic fertilizers, in comparison with those of crops fertilized with composts. It must be admitted that actual knowledge on these points is inadequate. The relations of mineral nutrition to vitamin content have been investigated but little, though evidence thus far found indicates that these relations are most complex, and that conditions favoring a high content of one vitamin in a particular crop may not be equally favorable to the content of a different vitamin in that crop, or of the same vitamin in a different crop.

Resistance to different diseases and insects, while admitted to be related to the content of various nutrients in crop plants, varies greatly with different crops, nutrients, and invading organisms—and very little is known about these very complicated relationships. In general, vigorous plants survive the attacks of insects and diseases to a greater extent than do weakly ones, but there are plenty of exceptions to this generalization. It is certainly not correct to conclude that one can control diseases and insects through the use of composts.

THE FADS

When knowledge is insufficient,

belief often holds sway, and fervor replaces judgment. With the rise of popular interest in plant culture, particularly horticulture, which is an accompaniment of urbanization, come schools and sects. A common characteristic of these fellowships is holding fast to that which supports their creeds, and throwing away or disregarding that which would weaken or qualify them.

The schools of agricultural thought or argument which have attracted most attention recently are several advocating the elimination of inorganic fertilizers and the return to composts, and others advocating the discarding of the plow or the inoculation of soils with earthworms. But little information in addition to that already given is needed to appraise these schools, each of which has made some worth-while contributions in the form of popularizations of knowledge and has at the same time reduced the value of these contributions by ill-supported claims or unreasoned opposition to other methods.

"Bio-Dynamic Farming"

One of the schools which has attracted attention principally among amateur horticulturists during several years is bio-dynamic farming and gardening, introduced into this country by D. Ehrenfried Pfeiffer, author of *Bio-dynamic Farming and Gardening*. This school advocates the return to the soil of all plant and animal wastes, in composts whose fermentation is said to be aided through the addition to the compost piles of certain secret preparations designated by number, and presumably containing bacterial cultures. To be permitted to use these cultures, one must receive special instruction which is provided by the founder of the cult. The establishment of a system of farming in which livestock and other animal life, the human residents of the farm, and the crops constitute a biological equilibrium or cycle is advocated.

Another school is that founded

in India and England by Sir Albert Howard, and advocated in America by J. I. Rodale, writer, editor, and publisher, of *Emmaus*, Pa., editor of *Organic Gardening*, a magazine on this topic, and author of *Pay Dirt*. This school also advocates the use of composts, but does not insist upon any secret or unusual methods of composting, though it names its composting procedure the Indore Process. It opposes the use of inorganic fertilizers, insecticides, and fungicides, and insists that crops grown with composts are resistant to damage by insects and plant diseases and at the same time confer similar resistance and health upon livestock and human consumers. Earthworm gardening may be regarded as a branch of the organic gardening school.

With respect to these schools or cults, there is complete agreement among soil scientists that the composting of crop residues and animal wastes is a farming procedure to be strongly recommended—in fact no generation of agricultural scientists has failed to emphasize the conservation of farm manures. There is practically complete agreement among agricultural scientists, however, that when crops are sold from the farm, as must be done in our urbanized and industrialized economy, plant nutrients must be returned from economically available sources, to balance the soil budget. Thanks to competition, moreover, it is advantageous to obtain high yields, because the costs of tillage and seed are fixed within fairly narrow limits, and one method of obtaining high yields is by supplementing the farm compost supply with inorganic fertilizers. Increases in yields thus obtained are not accompanied by any diminution of the nutritive value of the crops, because increases can be attained only by increasing the concentrations or improving the balance of the plant nutrient elements such as calcium, nitrogen, phosphorus, iron, and the minor elements, all

of which are equally important in animal and human nutrition. The greater crop, even if it is accompanied often by greater crop residues, constitutes a greater drain upon the nutrient supplies of the soil which need to be replaced in any permanent system of agriculture.

Agricultural scientists do not agree that compost-nourished crops on the whole are less subject to the attacks of insects and diseases, although they admit that the severity of attacks by particular diseases and insects often is influenced by the nutrition of the crop upon which each preys. Economic entomologists and plant pathologists universally recommend sanitary measures, including crop rotation and the composting or plowing under of infested or infected crop residues, as essential steps in the control of diseases and insects, and look upon the application of insecticides and fungicides as a last, though unfortunately frequent, resort.

As to composting methods, it has long been known that the composting process, a series of fermentations carried on by organisms which are almost universally present in well-drained soils, requires the presence of substances which contribute to the nutrition of these organisms. They, like other living things, require proteins or nitrogenous compounds, carbohydrates or fats, wa-

ter, and minerals for their development. If any of these materials is lacking, fermentation is retarded or stopped. In the presence of all of these materials, each within a reasonably favorable proportion to the others, fermentation will proceed without artificial inoculation with bacterial or fungus cultures, because these are nearly universally distributed in soils and on plant and animal wastes.

"Earthworm Gardening"

Experiments with earthworms have not yielded clear evidence that their activity in itself is beneficial to plant growth. Under field conditions, the soils favoring earthworm development, or those rich in organic matter, also are favorable to crop development, whether earthworms are present or not; earthworms when introduced soon migrate from soils low in organic matter or otherwise unfavorable to crop growth. They are certainly not an unmixed blessing in lawns; they thrive best in compost heaps in which fermentation is complete or well advanced.

"Plowmen's Folly"

A word on "plowmen's folly." The ordinary moldboard plow does not make the soil turn turtle; it does not create a layer of organic matter with a layer of soil on top. The furrow slices are turned more

nearly through 135 degrees than through 180 degrees, or about three-quarters of the way over rather than all of the way over; they are much broken as a rule, unless a tough, deeply rooted sod covers the soil surface. In either case, organic matter is well mixed with the soil, as it is in any event in the form of the grass, weed, or crop roots. Experimental evidence has been at hand during about 20 years, moreover, showing that plowing is beneficial to crops, at least under the conditions of the experiments reported.

It is admitted that much agricultural practice is faulty, and results in crops which are inferior both in quantity and quality, and also in the deterioration and destruction of our most important resource, the soil. The fault, as far as it lies at the door of the agricultural scientist, is one of failure to teach effectively, to a far greater extent than one of failure to know. Much remains to be learned, admittedly; but if current knowledge were applied, agricultural practice and soil conservation would be advanced very greatly. The aid of effective publicists is bound to be the more valuable, the better these publicists cooperate with the scientists, and utilize the tested and ordered information they provide, and so bring the public to appreciate and to apply the knowledge available.

★ Softee—A Midget Water Softener ★

Softee is a midget-sized portable water-softening unit that may be attached by a short length of rubber hose to any faucet. Its convenience, and its low price of \$8.45 will be likely to attract the attention of many people who know from experience the problem hard water can be in laundering and dishwashing.

Unfortunately, results of the test of *Softee* clearly indicate that this little unit would be of

little help in solving the problem. The basic zeolite principle, upon which the unit is supposedly built, is sound and has been used successfully for many years for softening water, but the *Softee* is evidently too small to allow the incorporation of sufficient zeolite to do an effective job.

The unit operated efficiently for a short time, but before 60 gallons of very hard water (18.0 to 19.6 grains per gallon hard-

ness) had flowed through the unit, almost all of its water-softening ability was lost. The unit was then regenerated according to directions given by the manufacturer, by filling it with a brine solution of 2 tablespoonsful of salt per pint of water and allowing to stand 5 minutes or more. After regeneration, test results indicated that the efficiency of the unit in softening water was considerably lower than it was in-

initially. Fair softening was achieved for only the first few gallons, and after 10 gallons the unit was almost ineffective again. After 15 gallons, the softening effect was gone. A second regeneration restored the softening ability somewhat, but this was lost at as rapid a rate as it was after the first regeneration. This was in marked contrast to the manufacturer's claim that "the efficiency does not decrease so long as [the unit] is regenerated occasionally" (and we don't think much of his way of using "occasionally," for regeneration after every 10 or 15 gallons hardly seems to us to be just occasionally).

Just how small the amount of water softened between regenerations is can be readily seen by comparing it with the amount used for common household tasks. Fourteen to eighteen gallons of water are required to fill an ordinary washing machine and from 22 to 28 gallons to complete one cycle in an automatic washer. From 3 to 9 gallons are used in a household dishwashing machine. The unit would certainly be inadequate to treat water



for washing clothes and dishes, bathing, and shampooing as illustrated in the construction booklet, unless the water were already relatively soft. In terms of grains of hardness, the capacity initially was less than 1000 grains and after regeneration was less than 100 grains, the latter equivalent to under 15 gallons of "moderately hard" water, less than 5 gal-

lons of "very hard" water. The usual, and of course much larger, domestic softening units have capacities ranging from 20,000 grains upward, between regenerations.

The rating is cr47.

C. Not Recommended

Softee Automatic Water Softener (National Mfg. Co., Portland 1, Oregon) \$8.45 postpaid.

Two Year-Round Motor Oils

IN our January 1947 report on Winter Motor Oils, *Champlin Hi-V-I* SAE 20 oil was rated *B. Intermediate* because its pour point was too high for a winter oil. The Champlin Refining Company informed CR after reading the report that, in November 1946, they had discontinued marketing of different oils for winter and summer use and combined their SAE 10 and SAE 10W oils into an SAE 10+10W oil, and their SAE 20 and SAE 20W oils into an SAE 20+20W oil.

These two oils are regarded by Champlin as year-round lubricating oils, and the company has decided to make no further distinction between summer and winter oils.

As the sample reported in our January article was purchased prior to the date men-

tioned, tests were made on samples of the new oils, *Champlin Hi-V-I* SAE 10+10W and *Champlin Hi-V-I* SAE 20+20W. The results warranted an *A-Recommended* rating for winter or summer use for both oils on the basis of the following characteristics as determined in the laboratory:

	Viscosity Index	Carbon Residue by Weight	Pour Point
<i>Champlin</i> SAE 10+10W	106	0.04%	-17.5°F
<i>Champlin</i> SAE 20+20W	102	0.08%	-10°F

A Report on Nine Weighing Scales

THERE are many types of weighing scales now being produced which are specifically designed for use in the home. Because of their poor construction and workmanship, and for other reasons, few of these can claim any approach to real accuracy in weighing.

When a consumer purchases such an instrument, he expects—and for good reason when one considers the price of present-day weighing devices—that it will accurately tell him the weight of any object he may place upon the platform within the capacity limit of the scale. Thus, if the smallest graduations on the beam or dial indicate ounces, then, for example, if the pointer indicates 3 lb. 4 oz., that, to the average user, is the correct weight. This supposition, unfortunately, is not justified, for a large number of the weighing devices now sold to the consumer are not nearly as accurate as the fineness of their graduation implies.

In many cases, indeed, it will be found that a scale will give a reading which is inaccurate to an

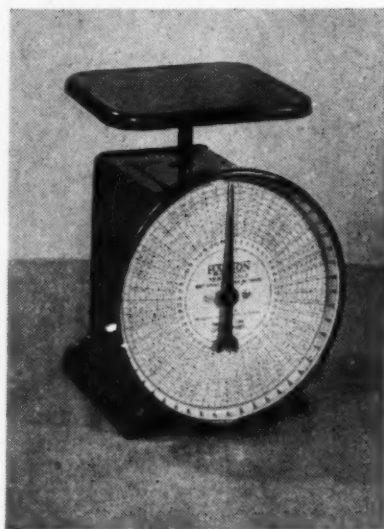


Figure 1
Hanson Spring Scale, Pan-above-dial Type.

extent greater than 2 or 3 graduations. (The *Chatillon Baby* scale reported on in this article was found to have an inaccuracy as large as 16 oz. at one point, yet its manufacturer graduated its dial in a way to imply that it could be used to weigh objects accurately by 1-oz. increments, or better.)

Consumers tend to assume that

a scale which is most convenient is the one to use, but laboratory people know that for convenience there must nearly always be paid the price of some degree of inaccuracy. While it is possible to make a scale which can be read quickly and is at the same time accurate, the cost of producing such an instrument would make its price prohibitive for ultimate consumers. (The more accurate computing scales—for example, those used by butchers and grocers—cost in the neighborhood of \$300 or more.)

Because of its low price, the popular favorite in households is the spring scale having a pan above the dial, similar to that shown in Figure 1. The table on page 29 showing test results shows that this type of scale gives very poor accuracy. All of the spring scales tested showed errors far greater than the errors shown by comparable beam scales. Beam scales, which do give relatively accurate weighing, are not as convenient to use and they cost more; they have thus in recent years not been popular with housewives.

The principal difficulty with the spring scales is that the mechanism which permits the pan to stand above the dial introduces a considerable amount of friction. The other difficulty is that a weighing spring has an error which varies according to the temperature. While this error can be corrected, it is not practicable to provide the correction in a cheap scale suitable for household use. The cheap spring scales (which means spring scales under \$20 or \$40 in price) *are not suitable for commercial weighing*, and are required to be so marked in some states and cities. Unfortunately this is not always done in cataloging the

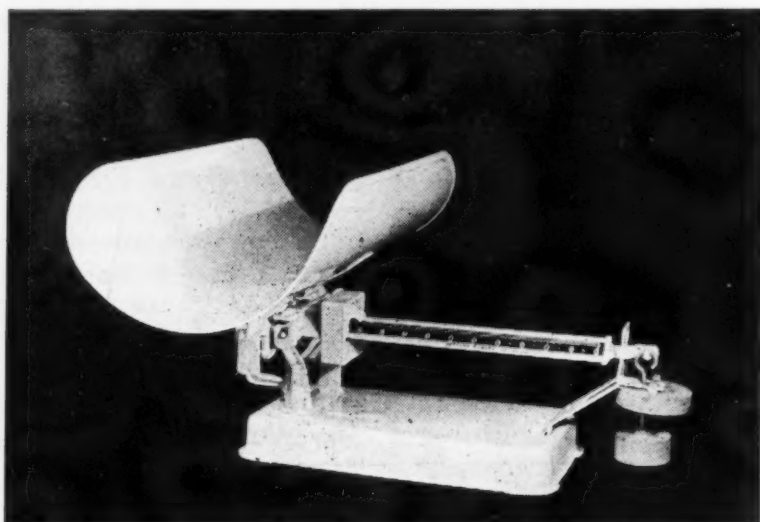


Figure 2
Detecto Baby

scale, and the purchaser may buy it on its general claim to accuracy only to learn upon receiving it that it is not at all suitable for use in buying and selling.

Scales of the lever type having the weighing platform above the housing (Figures 2 and 5) have their inaccuracies, too, one cause of which is the same as that referred to in connection with spring scales, friction in the "stabilizing linkage" that holds the pan to its proper motion.

For the purpose of rating the scales, they have been divided into two groups: those which are of a type that afford some degree of accuracy and sensibility (beam scales) and spring scales with the pan above the dial (which are cheap and convenient though considerably less accurate, and on that account unsuitable for commercial weighing and, indeed, for most household weighing).

It should be noted that because of frequent changes in postal rates, it is somewhat risky to buy postal scales which have rate information imprinted on them or shown in graduations unless it is first determined that these are up to date. Some special purpose scales, e.g., a baby scale, can be used for other purposes.

Beam Scales (Non-Automatic)

A. Recommended

Pelouze Standard, Postal Scale (Pelouze Manufacturing Co., Chicago) \$17.25. Capacity, 2 lb. by 1-oz. graduations. Graduated scale was 6 in. long. Used a thin hairline (wire) for accurate setting of weight reading. Sliding weight was rather difficult to position. Platform 6 in. x 5 in. Well constructed and accurate. Gunmetal gray sprayed finish. There was no reference point to indicate when correct balance had been attained; hence scale would not be suitable for use in the mail-room of any business where a considerable number of packages are shipped daily, because of its slow speed in use.

3

B. Intermediate

Detecto Baby (Detecto Scales Inc., Brooklyn 1, N.Y.) \$9. For weigh-

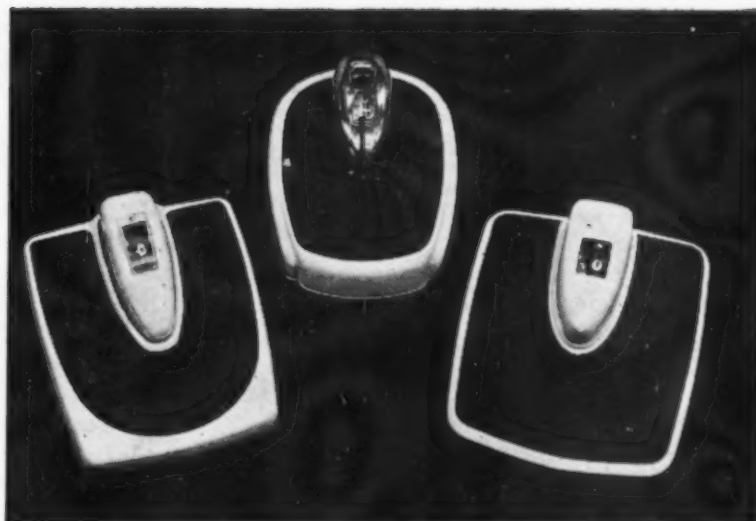


Figure 3

Left to right: *Detecto Bath*; *Health-O-Meter*; *Sears Roebuck Bath*, at the right purchased for test but no longer cataloged.

ing the baby, but also usable for general purposes in the household. Capacity, 30 lb. by $\frac{1}{2}$ -oz. graduations. Graduated scale was 9 in. long. Pointer construction was such that it was difficult to read the half-ounce graduations. Platform was a 9 in. x 19 in. trough with turned edges. General construction good. Ivory enamel finish, of good quality. Accuracy was found good, but some of the details of construction were not such as to suggest continuance of high accuracy.

2

Detecto Doctors' Scale (Detecto Scales Inc.) \$27.50. For personal weighing. Capacity, 300 lb. by $\frac{1}{4}$ -lb. graduations. Utilized two graduated scales 7 in. long, one with notches reading 250 lb. in 50-lb. increments and the other graduated to 50 lb. in $\frac{1}{4}$ -lb. increments. Platform size $11\frac{1}{2}$ in. long and tapering from 9 in. to 11 in. in width. General construction good. Base and platform were cast iron. Sensitivity and accuracy good for scale of this type. Rod attachment on rear for

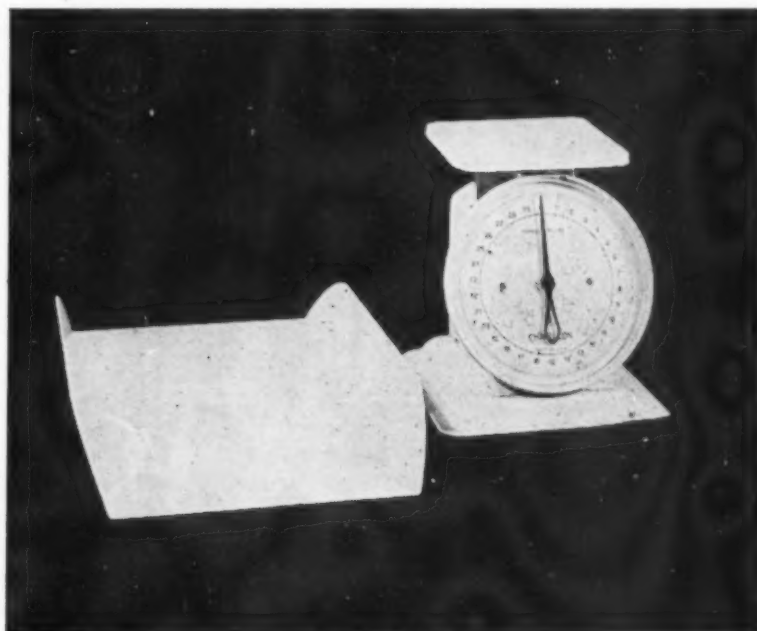


Figure 4
Chatillon-Baby G30A

measuring height (usable from 35 to 75½ in.) was a good feature. Graduated scales on beam were etched and should therefore be durable. Well finished in white enamel. This scale, though it probably would give good service in a home, would, it is judged, not be suitable for hard use in a doctor's office. 2

Automatic (Self-Indicating Spring) Scales

C. Not Recommended

Maid of Honor (Sears-Roebuck's Cat. No. 11-7851) \$1.89, plus postage. For general household use. Capacity, 24 lb. with 2-oz. graduations. Dial enclosed in body base. Numerals were easily read. Base was steady. Platform size 6 in. x 6 in. General construction, light, and finish only fair. Did not indicate correct weight and accurate adjustment was not possible. 1

Detecto Bath (Detecto Scales Inc.) \$5. For personal weighing. Capacity, 300 lb., with 1-lb. graduations. Scale face was on drum in housing and difficult to read through plastic window. Base was steady but would be subject to corrosion in bathroom use. Platform size 12 in. long and tapering from 8½ to 10 in. in width, with rubber mat. Constructed of heavy gauge sheet metal throughout. Well finished in white

enamel. Accuracy poor and readings subject to variations when position of weight was shifted on platform. As with many other personal weighing scales, this scale would be useful only for giving an approximation to a person's weight. 2

Chatillon-Baby G30A (John Chatillon & Sons, 90 Cliff St., New York 7) \$9.50. Two interchangeable platforms provided, one for baby-weighing and one for general household use. Capacity, 30 lb. with 1-oz. graduations. Inclined dial or reading face, 6 in. in diameter; easy to read. Base was 8 in. x 8½ in. and not steady. General construction good for this type of scale. Finish acceptable. Unusually large vari-

ance or error variation at a given load. 3

Hanson, Model 1515 (Hanson Scale Co., Chicago 22) \$10. For general household and postal use. Capacity, 30 lb., with 1-oz. graduations. Indicating dial was 7¼ in. in di-

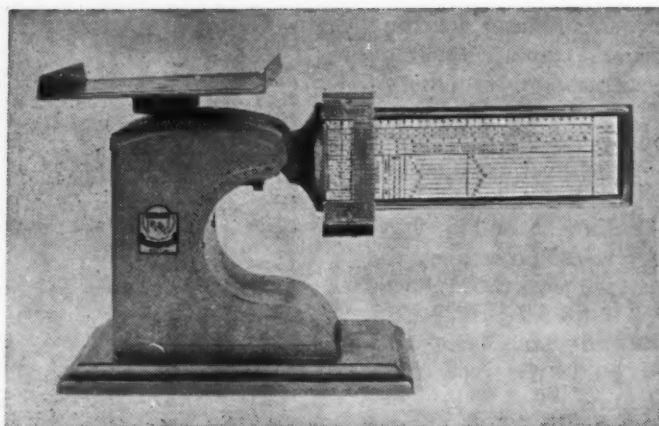


Figure 5
Pelouze Standard

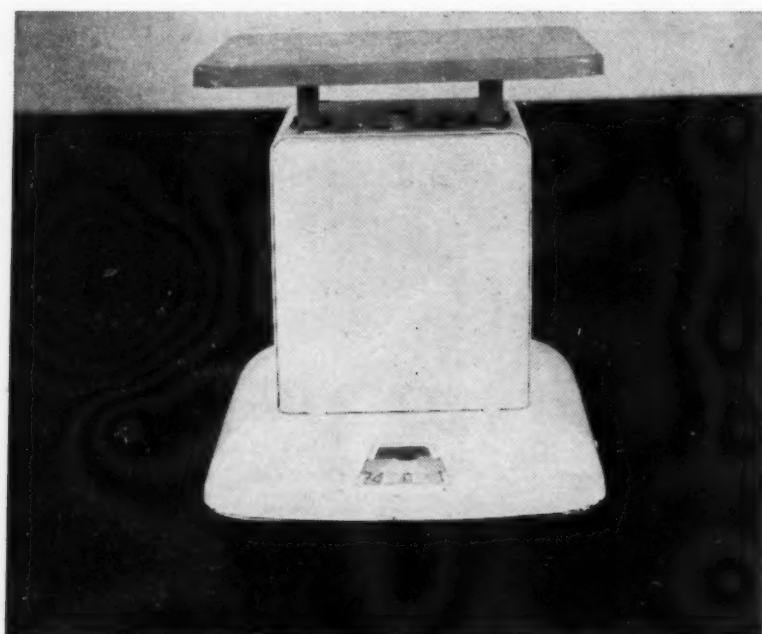


Figure 6
Sears' Maid of Honor

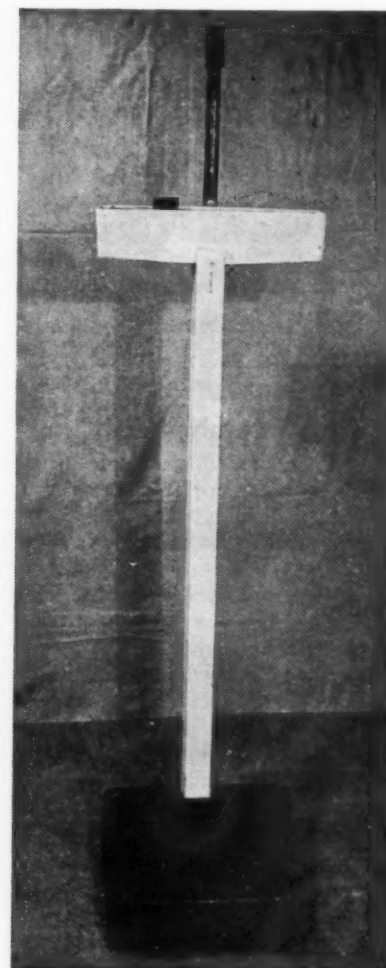


Figure 7
Detecto Doctors' Scale

Comparative Test Results

Name	Type of Scale	Type of Use	Capacity, Pounds	Subordinate (minimum) Graduations	Greatest Error Measured (approximate)
<i>Chatillon</i>	Spring	Baby	30	1 oz.	16 oz.
<i>Maid of Honor</i>	Spring	General	24	2 oz.	6 oz.
<i>Hanson</i>	Spring	General and Postal	50	1 oz.	4 oz.
<i>Presto</i>	Spring	Letter	5 oz.	1 oz.	0.3 oz.
<i>Detecto Bath</i>	Spring	Personal	300	1 lb.	2 lb.
<i>Health-O-Meter</i>	Spring	Personal	250	1 lb.	4 lb.
<i>Detecto Baby</i>	Beam	Baby	30	½ oz.	under 2 oz.
<i>Pelouze Standard</i>	Beam	Postal	2	1 oz.	under 2 oz.
<i>Detecto Doctors'</i>	Beam	Personal	300	¼ lb.	under 1 lb.

ameter and difficult to read. Scale was well balanced and rested evenly on its supports. Platform size 6½ in. square. Scale was well constructed of heavy gauge steel stampings. Well finished in green enamel. Scale had well arranged postal rate chart lithographed on dial. Accuracy, fair. Zero adjustment easily operated. Probably the least unsatisfactory scale of the spring type tested for general household use. 3

Health-O-Meter (Continental Scale Corp., Chicago 36) \$6.25 from manufacturer. For personal weighing. Capacity, 250 lb., with 1-lb. graduations. Scale face was on drum in housing and poorly protected by thin plastic window. Base was steady but not protected from possible corrosion, e.g., in bathroom use. Platform oval shaped, 12 in. long, 8½ in. wide, partially covered by rubber mat. Constructed of heavy gauge



Figure 8
Presto Letter Scale

sheet metal. Well finished in white enamel. Accuracy, poor. Weight readings depended to an excessive amount upon position of person on platform. Comment on *Detecto Bath* scale applies. 3

Presto Letter Scale (Metal Specialties Mfg. Co., 3200 Carroll Ave., Chicago 24) \$1.50. Capacity, 5 oz. For weighing letters or envelopes under 5 oz. only. Graduated in ounces. 3 small "domes" on base provide stability. Letter to be weighed is placed in slot (¾ in. wide) in body of scale and rests on end of flat spring which indicates weight by its deflection against a short scale ⅞ in. long on face and too short for needed precision. Readings were not accurate over the whole range. Well constructed, but not sufficiently accurate for its purpose. 3



Formula A-N-1 for colds, made by the Benson Laboratories, Pittsburgh, "sold only to corporations and for the specific purpose of helping reduce absences among employees," appears to be the revival of the formerly promoted *FC-100* and *A1-14*. This nostrum consists of two powder-containing envelopes, one blue and one white, which according to the manu-

Two "Cold Cures"

facturer's directions are to be emptied into a glass that is then filled slowly with hot water. The dose is to be stirred and drunk after effervescence has subsided. Qualitative an-



alyses recently made by the Chemical Laboratory of the American Medical Association indicated that the blue envelope contained carbonates and bicarbonates of sodium, potassium, calcium, magnesium, and lithium, with a trace of organic material. The white envelope contained citric acid (which, so far as known to medical science, has no utility in the cure

of colds), acetylsalicylic acid, and a small amount of iron salt. A small amount of aspirin added to the white envelope is the only ingredient which distinguished the product from its predecessors, *FC-100* and *A1-14*. About the same result in the treatment of a cold could be expected from taking a 5-grain tablet of aspirin as from use of this more expensive product, and executives of business firms would be well advised to pay no attention to the claims made for *Formula A-N-1* and depend upon the advice of competent medical practitioners to help with the problem of absenteeism due to colds. Patent medicine manufacturers are simply not the people to advise business concerns and others on technical questions connected with medicine and hygiene.

Another product sold as a cold preventive is known as *Pyogen* (distributed by Pyogen Products, Inc., 15050 Greenfield Road, Detroit 27), the sale of which is accompanied by promotion based on an account by a mysterious E. B. Gallaher of the Clover Manufacturing Company of Norwalk, Conn. It seems that Mr. Gallaher was attending a large banquet at Washington, D. C.'s

Mayflower Hotel, and was seated beside an "eminent scientist in the realm of bacteriology and preventive medicine," and it seems further that this eminent scientist, after some preliminaries, gave Mr. Gallaher a "special scientifically compounded spray" which he called *Pyogen*. Mr. Gallaher started using the spray, and as a result has "been free from colds since December 1944, or some 18 months." The product is not available in drugstores, but can be bought by industrial plants and wholesalers. Pyogen Products, Inc., which markets the medicine which Mr. Gallaher, a layman, so enthusiastically endorses, has revealed that its composition is a saccharin-flavored distilled-water solution of glycerol, oxyquinoline sulfate, carbonyldiamide (urea), thymol, and menthol, and as the American Medical Association says "the recognized actions of the stated ingredients of 'Pyogen' do not serve to justify the promotion or use of the mixture as a preventive or treatment for the common cold," and further: "it appears doubtful that such a solution is capable of any therapeutic action."

The best opinion is that antiseptic sprays cannot be effectively bactericidal or virucidal

on mucosal surfaces without destroying the membrane as well; "even if they were effective, they are washed away a few seconds or minutes after their application by ciliary activity, the flow of exudate and gravity." [Hobart A. Reimann, J.A.M.A., 132:487, Nov. 2, 1946.] Reimann further considers, that, due to the fact that medicated sprays remove protective mucus, their use may spread infection, and if applied with force may cause invasion of the sinuses. It seems quite in order to draw the conclusion from these findings that the devising of a treatment for colds had best be left in all cases to the medical profession, and to well-qualified scientific experts, not to Pyogen Products, Inc., or Benson Laboratories, or Mr. Gallaher of the Clover Manufacturing Company, none of whom seem to have skill or special knowledge in this field. And note well that testimonials are *not* evidence of performance, especially when medical questions are concerned. The businessman desiring to provide medical safeguards for the health of his employees will do well always to consult physicians and the American Medical Association, rather than other businessmen, or promoters of "patent medicines."



An Attachment for the Telephone— that is often useful



AN attachment for a telephone which will enable two persons to listen is a device that will be useful and convenient in many cases. One of the best uses for this type of gadget would be to permit Mom and Pop to listen simultaneously to the voice of a son or

dear friend in a distant city, and thereby help to keep down the cost of a long distance telephone call. Another use of the device is to gain better audibility when transmission is bad or under other difficult conditions, as the *Twinfone* permits both ears to receive the

sound. A device of this make was marketed around 1942 or 1943 under the name of *Twinfone* but went out of production during the war on account of priority problems. The appliance is now being marketed again (Telephone Devices Co., 10 E. 43 St., New York 17) in

a somewhat changed form under the same name, and at the price of \$2.75. (The pre-war unit was priced at \$1.95.)

The gadget is used by snapping one of its two elements over the receiver part of the telephone; a tube of rubber-like material connected with it transmits the sound from the receiver to a smoothly finished disk which is placed against the ear of one of the listeners. The other listener simply uses the telephone in the ordinary way. The arrangement serves to divide the sound received between the two persons listening. Thus both are able to hear the conversation and both can, if desired, participate in it. The gadget fits more easily



Showing Twinsone as attached to an office intercommunicating telephone receiver.

on a French-style phone than it does on the old-fashioned receiver; the larger diameter

of the old-type receiver makes the fitting of the *Twinsone* rather difficult.

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Compression Ratio— Or Expansion Ratio

FOR MANY YEARS, the *compression ratio* of an engine has been considered a major factor in engine efficiency, and measure of power output. Actually its use in this way is not correct. It is the *expansion ratio* of an engine which gives the best measure of efficiency and power developed. The two often run fairly close together, and on that account the compression ratio has been a serviceable although not a correct basis for comparison.

Mathematically, compression ratio is the piston displacement volume plus combustion chamber volume divided by the combustion chamber volume. The compression pressure is not the same as the compression ratio. Compression ratio as it has just been defined is clearly mechanically unchangeable in the ordinary engine. If a larger quantity of gasoline and air mixture is drawn into the cylinder at one time than another (as will take place when the throttle is opened), the greater amount will be squeezed tighter—to a higher pressure. Hence when it is exploded (rapidly burned) in the combustion chamber, more pressure will be produced and more power will be developed by the engine. It is because of this that the term "squeeze ratio" is sometimes used in engineering parlance as a substitute for compression ratio.

But suppose the throttle is kept wide open all the time. As the engine speed increases, the restrictions on the flow of mixture through the carburetor, inlet passages and grad-

ually decrease the relative amount of mixture that can get into the combustion chambers. Finally a speed of rotation is reached where these restrictions plus mechanical friction in the engine strike a balance with the power developed by burning of the mixture. At this point the maximum horsepower for any given engine is reached. Beyond this speed the restrictions and friction gradually become greater and reduce the net output, and the delivered or "brake" horsepower output of the engine decreases. Eventually, if the engine does not "burst" by failure of some mechanical part, the friction equals the power produced and the engine will not run any faster even if no load is applied (engine "running away"). To the credit of automobile engine designers it may here be noted that bursting of the engine seldom occurs, although overspeeding may cause permanent damage to the engine. (Airplane engines are not self-protecting against excessive speed, for their maximum speed must be controlled, as, for example, in power dives.)

It should now be apparent that the advertised compression *ratio* may not tell the true story completely, for the compression *pressure*, with restricted carburetor throat, intake passages, and valve areas, may be no greater than if a lower compression ratio were used. Carburetors with small throats (venturis) may be used to improve fuel economy or limit maximum car speed.

Usually a compromise is made between economy and maximum power output at high engine speed. Actually, most American automobiles are greatly overpowered, and a trend to less powerful and more economical and safer engines would be desirable. (Race car mechanics are well acquainted with the fact that by using a carburetor with larger throat size, smoothing out the inlet passages by filing, etc., and sometimes by increasing the valve lift—hence effective area of the passage—a passenger car engine can be "souped up" to increase maximum car speed, and to improve acceleration and hill-climbing ability.)

Car owners who want the utmost in performance in their cars should keep in mind, then, that while a high compression ratio as advertised *may* mean better performance, this does not necessarily follow. It would help the informed car buyer if manufacturers would give the compression *pressure* at three or four engine speeds within the usual operating speed range of the engine. Until such a practice is developed, the compression ratio will have to be used as a measure of potential engine performance, but in any given case, it may not be as important as the salesman would have the purchaser think.

Some engineers install vacuum gauges on the inlet manifolds of their engines. By measuring the amount of vacuum (pressure below that of the atmosphere), the effect of carburetor restrictions as well as throttle opening may be noticed. Valve port restrictions, however, are not included in this measure, since the connection of the gauge is to the manifold before the mix-

ture reaches the valves. With wide-open throttle, the less the vacuum (the nearer the manifold pressure to atmospheric pressure), the greater the quantity of the mixture which en-

ters the cylinders per stroke or per revolution, and vice versa.

The "collegiate" practice of removing the muffler and using a larger exhaust pipe does little for improving engine power, for

the restriction upon free flow of exhaust gases out of the engine and fresh mixture into the engine is chiefly determined by valve proportions and engine timing.

Off the Editor's Chest

(Continued from page 2)

The skillful phrasing of questions to prompt a witness to give the desired answer is a technique well known to the legal profession, but it has not been so widely associated with what some are pleased to refer to as the science of economics. If we interpret the implications in the letter correctly, the Ph. D. candidate wishes to secure the names of organized labor, farmer, business, and other groups that will be interested in actively bringing pressure, in the name of the consumer, to bear on the federal government to "do something" in a big, totalitarian way about prices. The term "a more positive governmental price policy" is a neat euphemism for avoiding the unpleasant associations of the term "governmental price-fixing" and avoids any suggestion as to whether prices should be fixed higher or lower. The request for proposals of "techniques for increasing the effectiveness of consumer representation" may reflect a hope of finding something other than the form postcard, form letter, standard telegram type of protest. Such pressure tactics have been so obviously inspired by some particular organized political group, that Congress has learned to give little heed to such communications even when they run to many thousands. The implications in the phrase "thought would need to be given to means for obtaining 'consent' for such a program" is one that every discerning consumer should ponder carefully. (The term "consent" is in quotation marks in the original letter.) Are we to be

subjected to a blitz campaign, planned by men claiming to be scholars rather than political propagandists, to railroad through Congress some new statute that will bring back a considerable measure of the bureaucrats' power to control the life of individuals and their business and social organizations?

Consumers who happily tore up their ration books in the expectation that they had seen the end of that sort of thing should not relax their vigilance against future attempts to reinstate government controls. As Professor William A. Paton observingly pointed out in an article which appeared in the Michigan Alumnus Quarterly Review entitled "The Queue Society—Do We Want It?":

Queues—once restricted to special occasions such as the sale of tickets to the world series—have been a commonplace in every community. Everyone has seen them, day after day, ordinary citizens waiting hours for a chance to buy a pair of stockings, a couple of frankfurters, or one small roll of toilet paper. We are long past the first shock of this phenomenon and have been on the verge of becoming resigned to the idea that in America, sweet land of liberty, we must follow the pattern of the totalitarian countries and line up to receive such dole of goods and services as the powers that be see fit to allot. . . .

There is a choice to be made that cannot be postponed any longer. The choice is between continuing to drift, under the pressure of a determined minority, into the stagnation of THE QUEUE SOCIETY or of purposefully resuming the march toward "THE GOOD SOCIETY."

Professor Paton calls attention to the fact that, in addition to the sheer tedium of standing in line in order to obtain needed commodities, citizens have spent millions of

hours in volunteer efforts to assist local government enforcement agencies, rationing panels, rent boards, and the like; consumers and businessmen have wasted more millions of hours in filling out rationing forms and government reports and in counting ration coupons; not to mention the shoe leather, tires, and patience required by the taxpayer who was obliged to make trips to various panels of his fellow citizens to obtain permission to heat his house, to buy gasoline to make a needed trip to the hospital, or to receive the right to purchase shoes for his children.

The unhappy memory of the exasperations, inconveniences (and sometimes hazards to health and continued economic activity) resulting from the wartime economic controls may have faded, now that the strait-jackets have been removed, but consumers who find it difficult to make ends meet in these days of astronomical prices will be well-advised we think, *not* to exchange their birthright for a mess of price-control pottage.

One Ph.D. thesis does not create a movement for revival of government controls of economic life, but since this particular thesis is undertaken under the joint direction of Professors Alvin H. Hansen, Merle Fainsod, and John T. Dunlop, it may be of interest in indicating the trend which some college professors of the "planned society" persuasion are encouraging in their students. Few consumers, unfortunately, are aware of the great extent to which college teaching is tending to favor the totalitarian idea that if anything is wrong with our social and economic order, the government can somehow "fix it" with an order or a plan.

★ ★ A New Tool— ★ ★

The Lever-Lock or Toggle-Lock Plier-Wrench

LATELY various hardware and automobile-supply stores have been offering a type of wrench which is a sort of cross between a wrench and a pair of pliers. Three specimens of this type (see illustration) have been recently examined.

The indications are that a tool of this type would be useful for many different operations which mechanics and home craftsmen are called upon to do. In using the device, the jaws are adjusted so that their opening is slightly less than the size of the article to be held or the distance across flats of the nut to be grasped. Squeezing the handle operates a toggle mechanism which gives a large force advantage and locks the jaws onto the article so that they "stay put." This feature is extremely advantageous, for instance, in removing a nut from a bolt or a union from a tube in a hard-to-get-



BMC, No. 9

at place where under other circumstances two persons might often be required to do the job.

Because of the deeply serrated jaws (especially on *Samson* and *Snap-Lock*) and consequent crushing and marring effect on soft material, this type of wrench would not be recommended for use on a weak tube or pipe, or on softer metals such as brass or copper, or plastics, or on any surface

where the retention of an original good finish was desirable.

B. Intermediate

Samson Lever Jaw Wrench (Distributed by Sears, Roebuck & Co., Cat. No. 9-4497) \$1.79, plus postage. Capacity, 0 to 1½ in. (The *Dunlap*, now listed with same catalog number at \$1.49, plus postage, is apparently the same wrench.) Slightly heavier construction than the other two brands, but not so well finished. Jaw hardness considered satisfactory. 2

Snap-Lock Plier-Wrench, No. 1610 (Seymour Smith & Sons, Inc., Oakville, Conn.) \$1.95. Capacity, 0 to 1¼ in. The rocking jaw used on this wrench gave trouble in some cases when not correctly seated on the work being held, owing to a tendency to slip off the work. Jaw hardness satisfactory. 2

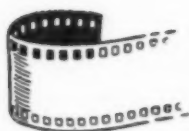
BMC Precision Pressure Lock Wrench, No. 9 (BMC Manufacturing Co., Binghamton, N.Y.) \$2.95. Capacity, 0 to 1-1/16 in. Seems to be a well designed wrench; included a graduated jaw adjustment for setting the jaws at the correct opening. Jaws found to be somewhat too soft. 3

★ Considerably Less Than Skin Deep ★

THERE isn't so much gold on gold-plated jewelry as its gleaming appearance might lead the buyer to think. According to the *Proposed Commercial Standard for Marking Gold-Electroplated Articles*, the actual gold deposit on such jewelry may be only 7 millionths (0.000,007) of an inch thick, although on complicated shapes

it is necessary to deposit an average thickness of 0.000,010 inch to produce the 0.000,007 inch minimum. At \$35 per troy oz., 1 millionth of an inch of gold costs about 5c per square foot, which would make the actual gold in the coating on gold-plated jewelry worth about

35c per square foot (there would also be the cost of the electroplating process, overhead, etc., of course, but that would be small where plating was being done on a mass-production basis). Note: A square foot or 35c worth of gold seven millionths of an inch thick would cover a lot of ordinary gold-plated jewelry.



Ratings of Motion Pictures



THIS section aims to give critical consumers a digest of opinion from a wide range of motion picture reviews, including the motion picture trade press, leading newspapers and magazines—some 19 different periodicals in all. The motion picture ratings which follow thus do not represent the judgment of a single person, but are based on an analysis of critics' reviews.

The sources of the reviews are:

Box Office, *Charm*, *Chicago Daily Tribune*, *The Christian Century*, *Cue*, *Daily News* (N.Y.), *The Exhibitor*, *Harrison's Reports*, *Motion Picture Herald*, *National Legion of Decency List*, *Newsweek*, *New York Herald Tribune*, *New York Times*, *Parents' Magazine*, *Release of the D.A.R. Preview Committee*, *Successful Farming*, *Time*, *Variety* (weekly), and *Unbiased Opinions of Current Motion Pictures* which includes reviews by the General Federation of Women's Clubs, the American Legion Auxiliary, National Film Music Council, and others.

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), and C (not recommended) on its entertainment values.

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure	hist—founded on historical incident
biog—biography	mel—melodrama
c—in color (Technicolor, Cinecolor, Trucolor, Magnacolor, or Vitacolor)	mus—musical
car—cartoon	mys—mystery
com—comedy	nov—dramatization of a novel
cri—crime and capture of criminals	rom—romance
doc—documentary	soc—social-problem drama
dr—drama	trav—travelogue
fan—fantasy	war—dealing with the lives of people in wartime
	wes—western

A	B	C	
—	1	3	Adventure Island...adv-c A
—	3	2	Adventures of Don Coyote...mus-wes-c AYC
2	10	—	Adventuress, The...war-mel A
—	5	2	Angel and Sinner...dr A
—	3	1	Angels of the Streets...soc-dr AY
—	2	4	Anything for a Song...mus-dr A
—	6	3	Apache Rose...mus-wes-c AYC
1	10	1	Bachelor and the Bobby-Soxer, The...com AY
—	1	8	Backlash...mys-mel A
—	4	5	Bamboo Blonde, The...mus-war-rom A
—	3	6	Banjo...dr AYC
1	4	3	Barber of Seville, The...mus-dr AY
—	2	6	Beat the Band...mus-com A
3	11	6	Beginning or the End, The...war-dr AYC
1	3	4	Bellman, The...mel A
—	6	—	Bells of San Angelo...mus-wes-c AYC
—	1	6	Bells of San Fernando...mel A
—	3	2	Big Fix, The...mel AY
—	2	4	Big Town...dr A
2	4	—	Black Gold...dr-c AYC
—	4	7	Black Narcissus...dr-c A
—	1	7	Blackmail...mys-mel A
—	10	6	Blaze of Noon...dr AYC
—	3	4	Blondie's Holiday...com AYC
2	5	1	Bob, Son of Battle...dr-c AY
1	4	1	Body and Soul...dr A
—	2	2	Border Feud...wes AY
—	4	11	Born to Kill...cri-mel A
—	7	9	Brasher Doubloon, The...mys-mel A
—	5	7	Brute Force...cri-mel A
—	8	2	Buck Privates Come Home...com AYC
—	—	4	Buffalo Bill Rides Again...wes AYC

A	B	C	
—	—	3	Bulldog Drummond at Bay...mys-mel AYC
—	3	3	Burning Cross, The...dr A
1	8	1	Cage of Nightingales, A...dr A
—	5	11	Calcutta...cri-mel A
2	8	4	Captive Heart, The...war-dr AY
—	8	5	Carnegie Hall...mus-dr A
—	7	4	Carnival in Costa Rica...mus-com-c AY
—	3	4	Carnival of Sinners...dr A
—	10	5	Cheyenne...mus-wes A
—	2	2	Christmas Eve...dr A
—	—	7	Cigarette Girl...mus-com A
—	1	2	Citizen Saint...doc-dr AYC
—	—	3	Code of the Saddle...wes AYC
—	3	3	Code of the West...wes AYC
—	2	1	Colonel Chabert...dr A
1	10	3	Copacabana...mus-com A
—	3	7	Corpse came C.O.D., The...cri-com A
—	4	1	Crimson Key, The...mys-mel A
2	8	4	Crossfire...soc-mel A
—	3	7	Cry Wolf...mys-mel A
1	7	—	Cynthia...com AYC
—	1	7	Danger Street...cri-mel A
—	3	3	Dangerous Venture...wes AYC
—	4	7	Dark Delusion...dr AY
1	12	3	Dear Ruth...com AY
—	6	3	Deep Valley...mel A
—	3	6	Desert Fury...mel-c A
—	3	2	Desperate...cri-mel AY
—	7	3	Devil Thumbs a Ride, The...mel A
—	3	8	Dick Tracy's Dilemma...cri-mel A
—	8	8	Dishonored Lady...dr A
2	6	2	Down to Earth...mus-fan A
—	3	1	Dragnet...cri-mel AY
—	13	4	Egg and I, The...com A
—	1	2	Escape Me Never...dr A
—	7	6	Fabulous Dorseys, The...mus-biog AYC
—	2	6	Fall Guy...mys-mel AY
2	14	—	Farmer's Daughter, The...com A
—	8	4	Fear in the Night...cri-mel AY
3	8	3	Fiesta...mus-dr-c AY
—	1	2	Fighting Frontiersman, The...wes AYC
—	3	4	For the Love of Rusty...dr AYC
—	7	7	Framed...mel A
—	5	1	Frieda...war-dr A
—	2	1	Fun and Fancy Free...mus-car-c AYC
—	3	4	Fun on a Weekend...com A
—	—	6	Gas House Kids Go West...com AY
2	12	3	Ghost and Mrs. Muir, The...fan A
—	1	4	Ghost Goes Wild, The...com A
—	—	4	Ghost Town Renegades...wes AYC
—	1	2	Great Betrayal, The...doc A
11	7	1	Great Expectations...nov AYC
—	—	5	Green Cockatoo, The...cri-mel A
—	12	2	Green for Danger...mys-mel A
—	9	6	Guilt of Janet Ames, The...dr A
—	6	2	Guilty, The...mys-mel A
1	7	5	Gunfighters...wes-c A
—	—	4	Hard Boiled Mahoney...mel A
—	3	3	Heartaches...mus-mel AYC
—	3	4	Heaven Only Knows...fan A
—	2	4	Her First Affair...dr A
—	6	1	Her Husband's Affairs...com AY
—	13	5	High Barbaree...dr AYC
—	8	1	High Conquest...adv A
1	4	—	High Tide...cri-mel A
—	9	3	Hit Parade of 1947...mus-com AY
—	2	1	Hollywood Barn Dance...mus-com AY
—	—	4	Homesteaders of Paradise Valley...wes AYC
—	7	10	Homestretch, The...dr-c A
—	5	10	Honeymoon...mus-com A
—	—	4	Hoppy's Holiday...wes AYC
2	9	3	Hucksters, The...nov A
—	4	3	I Cover Big Town...cri-mel A

A	B	C	
2	9	3	I Know Where I'm Going.....dr A
1	8	4	I Wonder Who's Kissing Her Now.....mus-com-c A
—	4	9	Imperfect Lady, The.....dr A
2	13	—	It Happened in Brooklyn.....mus-com AYC
—	13	3	It Happened on Fifth Avenue.....mus-dr A
—	4	8	Ivan the Terrible.....hist-dr A
—	7	7	Ivy.....mys-mel A
—	1	8	Jewels of Brandenburg.....cri-mel AY
—	1	7	Jungle Flight.....dr A
—	2	5	Keeper of the Bees.....rom AYC
—	1	5	Key Witness.....cri-mel A
—	1	3	Killer at Large.....cri-mel A
—	3	1	Killer Dill.....cri-com A
—	4	2	Kilroy Was Here.....com AY
—	2	4	King of the Wild Horses.....mus-mel AYC
2	3	2	King's Jester, The.....mel A
1	3	1	Kiss of Death.....mys-mel A
—	6	3	Lady Surrenders, A.....rom A
—	—	4	Land of the Lawless.....wes A
—	2	2	Last Frontier Uprising.....mus-wes-c AYC
—	1	5	Last of the Red Men.....nov-c AYC
—	—	4	L'Atalante.....dr A
2	13	2	Late George Apley, The.....nov A
—	—	3	Law Comes to Gunsight.....wes AYC
—	—	6	Law of the Lash.....wes AYC
—	1	2	Life Begins Anew.....dr A
2	6	—	Life With Father.....com-c AYC
—	3	6	Likely Story, A.....com A
—	2	4	Little Miss Broadway.....com A
—	5	7	Living in a Big Way.....mus-dr A
—	1	3	Lone Hand Texan, The.....mus-wes AYC
—	2	1	Long Night, The.....dr A
—	5	5	Lost Honeymoon.....com AY
—	2	1	Louisiana.....mus-biog AY
—	3	8	Love and Learn.....mus-com A
—	8	5	Love Laughs at Andy Hardy.....mus-com AY
1	4	1	Lured.....cri-mel A
—	7	9	Macomber Affair, The.....dr A
—	5	7	Magic Bow, The.....mus-nov AYC
—	2	3	Marauders, The.....wes AYC
—	4	2	Merton of the Movies.....com A
—	—	3	Millerson Case, The.....cri-mel A
—	1	5	Millie's Daughter.....dr A
5	12	1	Miracle on 34th Street.....com AYC
1	3	7	Monsieur Verdoux.....dr A
—	9	6	Moss Rose.....mys-mel A
—	1	3	Mother Wore Tights.....mus-com-c AY
—	3	1	Murderer Lives at Number 21, The.....mys-mel A
—	10	3	My Brother Talks to Horses.....com AYC
1	13	—	My Favorite Brunette.....com AY
—	6	6	New Orleans.....mus-dr A
—	3	3	Newshounds.....cri-com AY
—	1	2	Nicholas Nickleby.....nov AY
—	3	13	Nora Prentiss.....dr A
—	6	5	Northwest Outpost.....mus-rom A
4	10	4	Odd Man Out.....dr A
—	—	4	Oregon Trail Scouts.....wes AYC
1	8	8	Other Love, The.....mus-dr A
—	—	4	Over the Sante Fe Trail.....mus-wes AYC
—	1	5	Patient Vanishes, The.....cri-mel A
2	11	1	Perils of Pauline.....mus-com-c AY
—	2	5	Philo Vance Returns.....mys-mel A
—	—	6	Philo Vance's Gamble.....mys-mel A
—	1	4	Pioneer Justice.....wes AYC
1	7	7	Possessed.....dr A
—	1	4	Pretender, The.....cri-mel AY
—	5	13	Private Affairs of Bel Ami, The.....dr A
—	—	4	Queen of the Amazons.....mel A
—	2	2	Queen's Necklace, The.....hist-dr A
—	1	2	Rainbow over the Rockies.....mus-wes AYC
1	6	6	Ramrod.....wes A
—	4	1	Range Beyond the Blue.....mus-wes AYC
1	12	2	Red House, The.....cri-dr A
—	3	2	Red Stallion, The.....dr-c AYC
—	8	8	Repeat Performance.....fan A
—	1	2	Riding the California Trail.....wes AYC
—	6	3	Riff-Raff.....mel A
—	3	—	Road Home, The.....war-dr A
—	9	1	Romance of Rosy Ridge.....mus-dr AY

A	B	C	
—	8	1	Roosevelt Story, The.....doc AY
—	3	1	Rustlers of Devil's Canyon.....wes AYC
—	1	3	Saddle Pals.....mus-com AY
1	2	3	San Demetrio, London.....war-mel AY
—	5	9	San Quentin.....mel A
—	3	1	Sante Fe Uprising.....wes AYC
—	3	3	Sarge Goes to College.....mus-com AY
—	—	4	Scared to Death.....mys-c A
—	9	8	Sea of Grass.....wes-dr A
—	2	4	Second Chance.....mys-mel AY
1	8	2	Secret Life of Walter Mitty, The.....mus-com-c AY
—	2	2	Sepia Cinderella.....mus-com A
—	3	3	Seven Keys to Baldpate.....mys AY
—	—	3	Shadows on the Range.....wes AYC
—	1	2	She Returned at Dawn.....dr A
1	1	1	Shoe Shine.....dr A
—	3	1	Shoot to Kill.....cri-mel A
—	5	—	Shop Girls of Paris.....dr A
—	9	—	Sin of Harold Diddlebock, The.....com A
—	1	3	Singapore.....mel A
—	4	7	Slave Girl.....com-c A
—	5	2	Something in the Wind.....mus-com A
—	1	2	Son of Rusty, The.....dr AYC
1	2	3	Song of Love.....mus-dr AY
—	4	2	Song of the Thin Man.....mys-mel A
—	1	3	Song of the Wasteland.....mus-wes AYC
—	2	4	Spoilers of the North.....mel A
—	4	3	Sport of Kings.....dr AYC
—	10	4	Springtime in the Sierras.....mus-wes-c AY
—	—	6	Stallion Road.....dr A
—	1	3	Stepchild.....soc-dr A
—	10	7	Stork Bites Man.....com AY
—	—	—	Suddenly It's Spring.....com A
—	4	6	Tarzan and the Huntress.....adv A
—	3	8	That Way With Women.....com AY
—	1	4	That's My Gal.....mus-com-c A
—	6	5	That's My Man.....dr AY
—	11	8	They Won't Believe Me.....mel A
1	11	2	This Happy Breed.....dr-c AY
—	5	4	Three on a Ticket.....mys-mel AY
—	6	1	Thunder Mountain.....wes AYC
—	3	15	Time Out of Mind.....nov A
—	3	2	Too Many Winners.....cri-mel A
1	5	2	Torment.....dr A
—	6	6	Trail Street.....mus-wes AYC
—	4	2	Trespasser, The.....mys-mel A
—	7	9	Trouble With Women, The.....com A
—	2	3	Twilight on the Rio Grande.....mus-wes AYC
—	—	4	Twins.....com A
—	2	3	Two Anonymous Letters.....war-dr A
—	5	11	Two Mrs. Carrolls, The.....mel A
—	4	1	Under the Tonto Rim.....wes AYC
—	8	—	Undercover Maisie.....com A
—	4	4	Unexpected Guest.....wes AY
1	6	5	Unfaithful, The.....dr A
1	5	1	Unfinished Dance, The.....mus-dr-c AY
—	3	5	Untamed Fury.....mel A
—	—	5	Vacation Days.....mus-wes AYC
—	1	2	Valley of Fear.....wes AYC
—	1	5	Variety Girl.....mus-com-c AY
—	5	5	Vigilantes Return, The.....wes-c AYC
—	2	7	Violence.....mel A
—	3	4	Vow, The.....dr A
—	—	3	We Lived Through Buchenwald.....war-doc A
2	13	2	Web, The.....cri-mel A
—	2	6	Web of Danger.....mel A
—	2	15	Welcome Stranger.....mus-com AY
—	1	2	West of Dodge City.....mus-wes AYC
—	2	2	West to Glory.....mus-wes AYC
—	7	11	Wicked Lady, The.....dr A
—	3	3	Wild Harvest.....mel A
—	4	2	Winter Wonderland.....rom A
—	3	11	Woman on the Beach, The.....dr A
—	5	3	Wyoming.....wes AYC
—	3	1	Yank in Rome, A.....war-dr A
—	1	5	Yankee Fakir.....cri-mel AY
—	—	3	Youth Aflame.....dr A
—	—	4	Zero de Conduite.....dr A

The Consumers' Observation Post

(Continued from page 4)

DDT in a mixture containing 11.2 percent of carbon tetrachloride by volume has been sold under the names of Zitt and Oresco, for the treatment of pediculosis, particularly among school children. In a city in New York State, one careful health officer checked on its safety and was advised by competent authority that the product was extremely dangerous because of possible harmful effects from inhalation, and from absorption through the skin, of the poisonous solvent carbon tetrachloride. Health officers throughout the state have been warned against use of the product on human beings. CR has long called attention to the dangers of using carbon tetrachloride as a hair preparation, and the need for great care in its use as a home dry-cleaning or spotting fluid.

* * *

WOOL in its raw state is going to be high in price for some time, according to trade experts. One factor is the wool price support law passed in the closing days of the last Congress, as the result of which the Department of Agriculture boosted the selling price of the better grades of wool held by the Commodity Credit Corporation by 2 cents a pound and, on August 15, resumed its wool price support program. Consumers will, of course, foot the bill, not only in taxes to support the plan but also by paying higher prices for the finished materials made from wool. The federal government talks a lot about the desirability of prices being held down, but its actions are almost always such as to increase prices that consumers pay for necessities of all kinds.

* * *

NEW OR NEWLY AVAILABLE: Pipe Cleaner Art (American Pipe Cleaner Co., 293 Lenox St., Norwood, Mass.), 100 12-inch pipe cleaners in assorted colors, \$1. Pipe cleaners, so hard to find during the war, have appeared in a new role for the handicraft-minded to twist into all sorts of shapes - animals, flowers, figures, baskets, etc. Grownups report that the colored cleaners not only play a useful role in entertaining children on rainy afternoons, but they make effective table and cake decorations for parties.

Meat Three Times A Day

by
F. J. Schlink and M. C. Phillips

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Special Edition

for

CR Subscribers

\$1.50

(Order Blank on p. 38)

Read

Meat Three Times a Day—

the book that tells you why!

IF you are the sort of person who finds that he has more pep and energy when he eats lots of meat, you will want to read this book. It debunks the various superstitions and dietary propaganda which hold that people ought to cut down on meat in the interest of health. The effectiveness of a high meat diet, as demonstrated in current researches, in preventing and curing a number of diseases is discussed and there is a chapter on the fundamental character of protein as the most essential type of human food. Practical advice is also given on how to select different meat cuts and how to cook them to realize maximum flavor and food value.

Dif Hand Cleaner, priced at about 19c to 23c for a 10-oz. package, has recently been analyzed. This product, apparently in wide sale in grocery stores, consists of approximately 45% of coarse sand (about 100 mesh); 20% of soap chips; 36% of partially hydrated disodium phosphate (also called dibasic sodium phosphate); and methyl salicylate (to give a wintergreen odor). In view of this simple composition, Dif hardly appears to justify its claim of washing hands "quicker and easier than anything you have ever used." As to the claim "Dif Hand Cleaner leaves the hands smooth and soft, with a clean, sweet odor," one should do better with any properly made soap, and it is hard to see how a composition of nearly 1/2 coarse sand would be particularly compatible with the claim of leaving the hands soft and smooth. There is perhaps no objection to the presence of sand as a mechanical cleansing material when the product is to be used for "extra dirty" dirt such as that which occurs in the handling of very greasy and grimy articles in the machine shop or garage, for example. The disodium phosphate is apparently present in the mixture to give "builder action" (increased detergency), which has been discussed in CR's various articles on laundry soaps, without increasing the alkalinity beyond that characteristic of soap. The pH of Dif in 1% solution is 10, which is about that of ordinary toilet soap; thus from the chemical standpoint the product would not be likely to cause any more harm to the skin than ordinary soap would.

Calgonite, which is recommended by its manufacturers for electrical dishwashers and is claimed to assure "maximum freedom from film and stain, not only on dishes, but in the machine as well," has been recently analyzed and found to consist of sodium metasilicate (an efficient water softener), trisodium phosphate (a well-known and widely-sold water softening and grease-dissolving agent, commercially available under such names as Oakite, Phos, Soilax, Dif, etc.), sodium hexametaphosphate (Calgon), and sodium carbonate (washing soda). Calgonite is considered by CR to be satisfactory for home mechanical dishwashing. Laboratory Calgonite, which is used for the cleaning of laboratory dishes, beakers, flasks, etc., is composed of Calgon (vitreous sodium hexametaphosphate) said to be present to the extent of 40%; soap, and a buffered mixture of carbonate and orthophosphate alkalis. Calgon, Inc. (Hagan Bldg., Pittsburgh) also manufacture a Mechanical Dishwashing Compound composed of Calgon and alkaline silicates of soda. This is expressly designed for use with dishwashing machines and is not recommended for hand dishwashing operations.

Consumers' Research, Inc. Washington, N. J.

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☐ New ☐ Renewal

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☐ New ☐ Renewal





PHONOGRAPH RECORDS



By Walter F. Grueninger

Please Note: Prices quoted do not include taxes. In the ratings AA indicates highly recommended; A, recommended; B, intermediate; C, not recommended.

ORCHESTRAL

Bach: *Brandenburg Concertos No. 2 and 5*. Boston Symphony Orchestra under Koussevitzky. 8 sides, RCA Victor Set 1118. \$4.85. As a composition, No. 2 is particularly enjoyable, No. 5 less so. Yet, Koussevitzky's unimaginative, disjointed, four-square performances were unexpected. The recording, made at Tanglewood, is satisfactory as to range but poor in dynamics. Audible surfaces.

Interpretation B
Fidelity of Recording A

Liszt: *Méphisto Waltz* (3 sides) and **Wolf-Ferrari:** *Secret of Suzanne—Overture* (1 side). Philharmonic-Symphony Orchestra of New York under Rodzinski. Columbia Set X 281. \$3. The Liszt is a weird work that pleases me; the filler, very gay. Compared to Koussevitzky Victor Set 870, Rodzinski gets less of the diabolical in his reading of *Méphisto* though it is striking. He is more smoothly recorded on more quiet surfaces, and offers the more colorful filler. Overall, Rodzinski.

Interpretation AA
Fidelity of Recording A

Menotti: *Sebastian*. Robin Hood Dell Orchestra of Philadelphia under Mitropoulos. 4 sides, Columbia Set 278. \$3. A ballet suite of chief interest to those who want a recorded work by this young composer, regarded as one to be reckoned with. Expert performance, recording quite good.

Interpretation AA
Fidelity of Recording A

Prokofieff: *Romeo and Juliet, Ballet—Excerpts* from Suite No. 2. Boston Symphony Orchestra under Koussevitzky. 4 sides, RCA Victor Set 1129. \$2.85. Four contrasting, effective movements depicting the "Montagues and Capulets," "Juliet the Maiden," a "Dance," "Romeo and Juliet's Grave." Exceptionally fine performance. Surface noise and some blurring of higher frequencies.

Interpretation AA
Fidelity of Recording A

Ravel: *Daphnis and Chloe—Suites No. 1 and 2*. Paris Conservatory Orchestra under Münch. 6 sides, Decca Set EDA 29. \$7. Suites from the Diaghileff ballet, ably performed, brilliantly recorded. Imported set.

Interpretation AA
Fidelity of Recording AA

Strauss: *Le Bourgeois Gentilhomme—Suite*. Pittsburgh Symphony Orchestra under Reiner. 10 sides, Columbia Set 693. \$6. Seldom heard, spirited incidental music to Moliere's play. Discriminating performance. Recording lacks sufficient body.

Interpretation AA
Fidelity of Recording A

Stravinsky: *Symphony in Three Movements*. Philharmonic-Symphony Orchestra of New York under the composer. 6 sides, Columbia Set 680. \$4. The world premiere took place in January, 1946. The music is reminiscent of *Sacre du Printemps* which is rarely performed. Definitive reading, excellent recording.

Interpretation AA
Fidelity of Recording AA

CHAMBER AND INSTRUMENTAL

Debussy: *Sonata No. 3 for Violin and Piano* (3 sides) and **Ravel:** *Berceuse* (1 side). Francescatti and Casadesus. Columbia Set X 280. \$3. Debussy's last work, heard often in recital. Musicianly, suave reading. Violin well recorded. Piano a bit dull. Better recorded, however, than the best competitor, 3 years old Szigeti-Földes Columbia Set X 242 in which violinist Szigeti contributes a unique interpretation.

Interpretation AA
Fidelity of Recording A

Schumann: *Humoreske*. Paul Loyonnet (piano). 6 sides, Concert Hall Society Set A 1. \$6.85. A lengthy, beautiful, rarely played work of many moods that may appeal to connoisseurs. Extraordinary performance and life-like recording on plastic.

Interpretation AA
Fidelity of Recording AA

Villa-Lobos: *Quartet No. 6*. Stuyvesant String Quartet. 6 sides, International Master Series Set 301. \$4. First recording of this singular work based on Brazilian folk tunes. Mainly for chamber music fans. Praiseworthy performance and recording in a "live" studio. Quiet surfaces.

Interpretation AA
Fidelity of Recording AA

Encores. Ruggiero Ricci (violin). 6 sides, Vox Set 196. \$3.75. "Variations on a Theme of Corelli," "Staccato Study" by Wieniawski, "Zephyr," "Caprice No. 1" by von Vecsey and similar technically difficult, unhackneyed numbers. Sensational performance. The set would prove more satisfactory if surface noise were less prominent.

Interpretation AA
Fidelity of Recording A

Piano Music of Mendelssohn. Vladimir Horowitz (piano). 6 sides, RCA Victor Set 1121. \$3.85. Included are the fine "Variations Serieuses," two "Songs Without Words," and a Horowitz *tour-de-force*—"Wedding March" and "Variations After Liszt." Phenomenal performance. Recording weak in the bass, otherwise good.

Interpretation AA
Fidelity of Recording A

VOCAL

A Night at Carnegie Hall. Pons, Stevens, Pinza (singers). 6 sides, Columbia Set 676. \$4. Famous opera arias featured in the motion picture, Carnegie Hall. Included are the "Lakmé Bell Song," "Mon Cœur," "Seguidilla," etc. Risé Stevens does not measure up to the others but on the whole the album is enjoyable.

Interpretation A
Fidelity of Recording A

Italian Art Songs. Giuseppe De Luca (baritone). 6 sides, Decca Set V 1. \$7. Recorded in U.S.A. last year, when this great artist was close to 70. Look here for *bel canto* style but not for the bloom of youth. Side one wavers in pitch. Pressed on plastic. Included are "Caro Mio Ben," "Siciliana," "Dolce Madonna," "Amarilli," etc.

Interpretation A
Fidelity of Recording A

Jennie Tourel in Rossini Arias (mezzo-soprano). 6 sides, Columbia Set 691. \$4. Most of Rossini's florid music was composed not for coloratura soprano, the voice which performs it today, but for deeper voices like Miss Tourel's. Here she does a very creditable job with the familiar "Una Voce Poco Fa" from the *Barber of Seville* and lesser known arias from *La Cenerentola*, *L'Italiana in Algeri*, and *Semiramide*. Excellent balance of voice and orchestra.

Interpretation AA
Fidelity of Recording AA

Verdi: La Traviata—Substantially "Complete" Recording. Adrianna Guerrini (soprano), Luigi Infantino (tenor), Paolo Silveri (baritone) and Chorus and Orchestra of the Rome Opera House under Vincenzo Bellezza. 30 sides, Columbia Set OP 25. \$18. The first complete opera recording made in Italy since the war. Uneven cast, with soprano and baritone taking the honors, though both exhibit weaknesses. Lackadaisical direction. Good recording.

Interpretation B
Fidelity of Recording AA

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